

Planning & Environment

Linkages Implementation Resource



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September 2008

Table of Contents

2 Planning and Environment Linkages

- 3 What Are Planning and Environment Linkages?
- 7 How Does PEL Work?
- 9 The PEL Puzzle
- 10 How Does PEL Begin?
- 14 Challenges and Benefits of PEL
- 16 Is PEL Legally Required?
- 17 How Does PEL Fit With Program-Level Work?
- 18 Emerging Issues in PEL

22 Integrated Planning

- 22 Linking Resource Plans With Transportation Needs and Solutions
- 24 Linking Assessed Effects With Planning Solutions
- 26 Linking Environmental Priorities with Transportation Plans

28 Linking Planning and NEPA

- 28 Linking Planning and Environment Needs
- 30 Linking Identified Solutions With Alternatives
- 31 Linking Assessed Solutions With Alternatives
- 35 Linking the Adopted Plan With Selected Alternatives
- 37 Linking Mitigation Strategies With Plans

Planning and Environment Linkages

Planning and the environment are directly linked. Since 1970, when the National Environmental Policy Act was signed into law, the transportation planning process has been tied to the environmental planning and review process. Since then, a myriad of laws, regulations, and court cases over the years has reinforced this connection.

Despite this underpinning, few if any professionals have a thorough understanding of both transportation planning and the environmental process. Most transportation agencies are organized along functional lines. Employees usually work in one area and rarely see a project through from planning to construction and maintenance. Likewise, resource agencies are typically organized along environmental disciplines. Few of their employees are experts in transportation planning. Thus, although planning and the environment are closely linked, in practice there is an inherent contradiction—the linkage is lacking. The result is a gulf between resource conservation management, transportation planning, and mandated environmental review work. To bridge this gap, the Federal Highway Administration (FHWA) developed the *Planning & Environment Linkages Implementation Resource Guide*.

The *Resource Guide* discusses how to take advantage of planning and environment linkages. Planning and Environment Linkages (PEL) are logical connection points between transportation planning and the environmental process. PEL helps streamline project delivery and improves planning and project level decision-making. It helps transportation agencies balance safety, mobility, environmental, community, and economic goals. In addition, PEL helps resource and land use agencies have a more meaningful and direct impact on transportation planning and resultant projects.

Although much has been written over the last several years that encourage PEL, it is not always clear to transportation professionals how to implement these linkages. This resource guide helps practitioners better understand these linkages. It explains the concepts of PEL, describes how agencies can benefit from it, and provides references and diagrams to help practitioners from multiple disciplines understand how best to bring about Planning and Environment Linkages.

The included sections provide additional background information on PEL. They take the reader through specific linkages, describing how to make connection points stronger, explaining what can be gained from them, and encouraging their use.

What Are Planning and Environment Linkages?

Planning and Environment Linkages represent an approach that helps bring about a collaborative and integrated transportation decision-making process. PEL occurs at points early in the transportation process when decision-makers consider environmental, community, and economic goals and carry these goals through to the project development and environmental review process, and on to design, construction, and maintenance.

The goal of PEL is to create a seamless decision-making process that minimizes duplication of effort, promotes environmental stewardship, and reduces delay from planning through to project implementation. PEL lays the foundation for a broad consensus on goals and priorities relating to transportation and related processes. It is supported by federal transportation regulations and FHWA programs that focus on improvements to the planning and environmental review processes.

PEL encourages:

- Communication with affected communities, allowing for consensus and a shared understanding of major issues;
- Identification of issues or decisions facing affected communities and helps them reach their goals;
- Integrated consideration of land use, transportation, and the natural and human environment; and
- Promotion of partnerships leading to a balanced decision-making process.

What Is Planning?

Planning in PEL refers to transportation planning. Planning is a cooperative process that fosters the involvement of all users of a transportation system, including businesses, community groups, environmental organizations, freight operators, and the public. Planning is done by both the Metropolitan Planning Organization (MPO) and the state Department of Transportation (state DOT). Planning must be cooperative because neither agency has responsibility for the entire transportation system. Both agencies cooperate with other stakeholders, including transit operators, airport and maritime authorities, Amtrak, and other local transportation providers (both public and private) within the MPO region.¹

Planning includes traditional steps, such as identifying problems, generating alternative solutions, evaluating those alternatives, developing and adopting a plan, and identifying potential mitigation needs and opportunities.

Role of the MPO

In metropolitan areas, the MPO is responsible for leading the planning process. An MPO is a policy-making body representing an urbanized area² typically responsible for transportation. Some MPOs have additional responsibilities such as economic development and land use planning under limited authority embodied in state and federal law. MPOs are usually made up of representatives from local government and transportation agencies that have authority and responsibility in those metropolitan areas.

1 This section is taken from *The Transportation Planning Process Key Issues: A Briefing Book for Transportation Decisionmakers, Officials, and Staff*, a publication of the Transportation Planning Capacity Building Program, Federal Highway Administration and Federal Transit Administration.

2 An urbanized area is an area that contains a city of 50,000 or more in population plus the incorporated surrounding areas meeting size or density criteria as defined by the U.S. Census Bureau.

An MPO has five core planning functions:

1. *Establish a setting:* Establish and manage a fair and impartial setting for effective regional decision-making in the metropolitan area.
2. *Identify and evaluate alternative transportation improvement options:* Use data and planning methods to generate and evaluate alternatives.
3. *Prepare and maintain a Metropolitan Transportation Plan (MTP):* Develop and update a long-range transportation plan for the metropolitan area covering a planning horizon of at least 20 years that fosters (1) mobility and access for people and goods, (2) efficient system performance and preservation, and (3) good quality of life.
4. *Develop a Transportation Improvement Program (TIP):* Develop a short-range program of transportation improvements based on the long-range transportation plan; the TIP should be designed to achieve the area's goals, using spending, regulating, operating, management, and financial tools.
5. *Involve the public:* Involve the general public and other affected constituencies in the core functions listed above.

Most MPOs will not take the lead in implementing transportation projects, but will provide an overall coordination role in planning and programming funds for projects and operations. MPOs produce three key documents during the planning process:

Metropolitan Transportation Plan (MTP).

Sometimes called the Long-Range Transportation Plan (LRTP) or Regional Transportation Plan (RTP). The MTP is the statement of ways the region plans to invest in its transportation system. It looks out over

a minimum 20-year period and includes both long-range and short-range program strategies/actions that will lead to the development of an integrated intermodal transportation system. The MTP must be updated every five years in air quality attainment areas or every four years in nonattainment or maintenance areas.³

Transportation Improvement Program (TIP). The TIP identifies the transportation projects and strategies from the MTP that the MPO plans to undertake over the next four years. All projects receiving federal funding or needing federal approval must be in the TIP. The TIP is the region's way of allocating its limited transportation resources among the various capital and operating needs of the area, based on a clear set of short-term transportation priorities.

Unified Planning Work Program (UPWP). The UPWP lists the transportation studies and tasks (e.g., data collection and analysis, public outreach, etc.) to be performed by the MPO over the next one to two years. Because the UPWP reflects local issues and strategic priorities, the contents of the UPWP differ from one metropolitan area to another.

Role of the state DOT

For activities outside the metropolitan area, the state DOT is responsible for the planning process. Each of the U.S. states, Puerto Rico, and the District of Columbia have an agency or department with official transportation planning, programming, and project implementation responsibility for that state or territory, referred to as the state DOT.

A state DOT has three core planning functions:

1. *Prepare and Maintain a Long-Range Statewide Transportation Plan:* Develop and update a long-range transportation plan for the state.

³ An air quality nonattainment area is a geographic region of the U.S. that the Environmental Protection Agency has designated as not meeting air quality standards.

Plans vary from state to state and may be broad and policy-oriented, or may contain a specific list of projects.

2. *Develop a Statewide Transportation Improvement Program (STIP):* Develop a program of transportation projects based on the state’s long-range transportation plan and designed to serve the state’s goals, using spending, regulating, operating, management, and financial tools. For metropolitan areas, the STIP incorporates the TIP developed by the MPO.
3. *Involve the public:* Involve the general public and other affected constituencies in the core functions listed above.

State DOTs produce two key documents during the planning process:

Long-Range Statewide Transportation Plan (LRSTP). The LRSTP may be policy-oriented or may include a list of specific projects and includes a systems-level approach to meeting projected demand for transportation services within the state over the next 20 or more years.

Statewide Transportation Improvement Program (STIP).

The STIP is similar to the TIP in that it identifies statewide priorities for transportation projects and it must be fiscally constrained. Through an established process, the state DOT solicits or identifies projects from rural, small urban and urbanized areas of the state. Projects are selected for inclusion in the STIP based on adopted procedures and criteria. The STIP must incorporate TIPs that have been developed by MPOs directly without change.

Table 1 summarizes the key products of the planning process.

What Is Environment?

Environment in PEL generally refers to two processes:

1. Integrating resource agency plans/ data with transportation and community plans/ data.
2. Linking planning to the environmental review process required under the National Environmental Policy Act of 1969 (NEPA).

Table 1

	Who Develops?	Who Approves?	Time Horizon	Content	Update Requirements
MTP/LRTP	MPO	MPO	20 Years	Future Goals, Strategies, and Projects	Every 5 Years 4 years for nonattainment and maintenance areas
TIP	MPO	MPO/ Governor	4 Years	Transportation Investments	Every 4 Years
UPWP	MPO	MPO	1 or 2 Years	Planning Studies and Tasks	Annually
LRSTP	State DOT	State DOT	20 Years	Future, Goals, Strategies and Projects	Not Specified
STIP	State DOT	U.S. DOT	4 Years	Transportation Investments	Every 4 Years

Integrating Resource Agency Input

The initial steps for integrating resource agency input into the environmental process are based on collaborative partnerships between resource agencies, MPO staff, state DOTs, local planners, and others so that a full sharing of information can occur.

An example of this integrated planning approach is *Eco-Logical*, a mitigation strategies toolkit developed by FHWA. *Eco-Logical* establishes an eight-step integrated planning framework, condensed here into three high-level steps:

- Embrace individual agency and partner management plans: Plans include resource management and recovery plans, along with community and transportation related plans that have been endorsed or are supported by local, regional, or state government.
- Assess broad environmental effects: Begin the assessment of environmental effects by relating proposed infrastructure actions to the distribution of terrestrial and aquatic habitat, or resource “hot spots,” species viability, and ecosystem or watershed functioning. It should not be confused with the project/NEPA level assessment of environmental effects that occurs, where impacts to species individuals are often counted and assessed. Transportation needs and potential solutions are evaluated in the context of environmental impacts and opportunities.
- Establish and prioritize opportunities: Use the information gathered and assessed to help provide an understanding of where existing conservation areas are and where additional ones could be best located. Elevate awareness as to how proposed projects can impact ecologically important areas. By looking at these data together, the relative importance of the area’s potential mitigation and/or conservation can be established and prioritized.

Linking Long-Range Planning to NEPA:

Linking transportation planning to the environmental review process required under NEPA could include the following:

- Establish Purpose & Need Statement: Develop specific statements outlining the problems the proposed transportation project is intended to address and attempts to gain consensus of the planning partners in order to move the project forward. Problems identified in Purpose & Need statements for transportation projects include traffic congestion, capacity and safety issues, and transportation system continuity.
- Alternatives identification: Reasonable solutions to the transportation problem that will meet the Purpose & Need. This list of alternatives will be narrowed to a smaller group that will be identified for study that is more detailed. With adequate documentation, alternatives which do not meet Purpose & Need or are not feasible generally may be eliminated at this step. However, an agency should not rely too heavily on Purpose & Need as a means to narrow alternatives. The fact that a portion of the Purpose & Need is met should be weighed against the social, environmental, and economic impacts and effects. Too often, an agency will dismiss an alternative because it does not meet all of the described Purpose & Need. In some instances, courts have later ruled that partially meeting Purpose & Need is acceptable when weighed against the overall social, environmental, and economic impacts of the proposed transportation alternative.
- Conduct an environmental screen: Evaluate and compares both the quantitative and qualitative environmental impacts of the alternatives.
- Identification of selected alternatives: Through

identification and screening of potential alternatives to determine those that are unreasonable.

- Develop potential draft mitigation plans: Based on specific alignment and requirements of the final design, mitigation plans are developed and/or finalized to reduce project environmental impacts (Note: Mitigation does not involve impacts).
- Feedback to the Planning process: Based on outcomes of these steps, the proposed design concept, scope, and mitigation needs to be provided and incorporated into future planning documents.

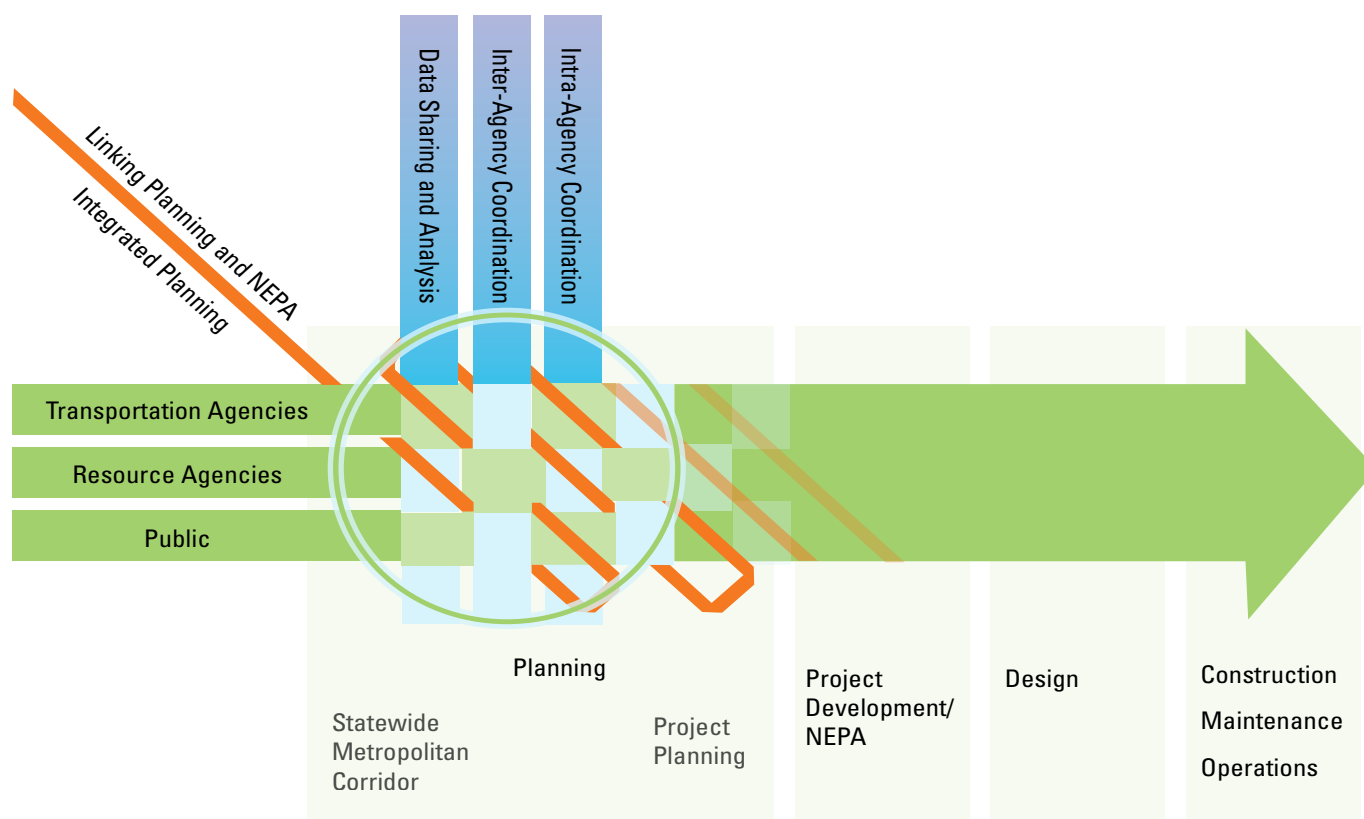
How Does PEL Work?

PEL works on multiple levels:

- Intra-agency coordination between transportation planning and project development staff.
- Inter-agency coordination between state DOTs and resource/land use agencies, non-governmental organizations, and other stakeholder groups.
- Data sharing and analysis with the public who live in areas affected by transportation projects.

Essentially, PEL weaves consideration for planning and the environment throughout the transportation decision-making process (see Figure 1).

Figure 1: Weaving Planning and Environment Linkages



4 NEPA and transportation: need and strategies for early involvement. Elaine Somers, U.S. Environmental Protection Agency. Road Ecology Center eScholarship Repository, John Muir Institute of the Environment, University of California, Davis. 2001.

While planning and the environment can be linked at almost any stage of the decision-making process, the most effective way for linkages to work is to coordinate as early as possible and ensure consistency with initial transportation plans as project planning moves forward. PEL should then be carried forward into project development, environment review (NEPA-level or similar state environmental review process), design, and ultimately construction, maintenance, and operations.

Integrated Planning

Over the last 10 years, partner agencies have placed increased focus on integrating their planning. Integrated planning is the connection between resource conservation and management plans and transportation planning. While resource data can be integrated at any stage of the transportation process (e.g., planning, project development, design, construction, maintenance), early integration is best since it is much more difficult to fully connect resource agency goals and priorities at later stages. Inconsistent or incompatible goals and priorities among transportation and resource agencies typically pose a major source of conflict and delay.

Integrating respective planning efforts helps develop consensus on how best to confront inconsistencies and generally produces significant time and money saving benefits for transportation decision-making. This type of collaborative planning offers opportunities to see and act on broader scale patterns and trends in our communities, regions, and ecosystems that are simply missed if environmental and community aspects are only addressed at the project level.

Linking Planning and NEPA

Considerable attention has also been given to Linking Planning and NEPA, which can be defined as the connection between system-level planning

and project-level decisions. It lays the foundation for key information such as (1) the Purpose & Need for the action; (2) a reasonable range of alternatives for meeting the stated need; (3) a description of the affected environment; and (4) the anticipated environmental impacts.⁴

Many states have participated in FHWA Linking Planning and NEPA workshops and developed action plans to tie their planning and environmental processes together more tightly, in more helpful and reinforcing ways that yield process efficiencies and better outcomes.

Mechanics

Separate from establishing the relationships needed to make PEL work, the mechanics for linking planning and environment are easy. PEL uses information developed during one planning process as the starting point for the next.

The information mutually agreed to be transferred between planning and the environmental process can be one of three types: data, analyses, or decisions. Examples of each type of information include:

- **Data:** road inventory, stakeholder identified needs, protected species habitat locations or mapped priority conservation areas.
- **Analyses:** transportation demand modeling need analyses for the base year and future years, comparisons of plan alternatives to the plan evaluation criteria, watershed conditions, and primary threats to water quality or certain resource categories.
- **Decisions:** locally preferred conceptual solutions for an individual corridor as endorsed by policy boards, solutions concepts rejected by the local policy board, watershed improvement priorities, and critical conservation priorities.

Documentation

A key to linking planning and the environment is “documentation.” The information developed in the planning process must be documented in a way that is both useful and acceptable to environmental partners and vice versa.

In integrated planning (the linkage of resource agency plans to long-range transportation plans), at least two key elements should be documented. First, the long-range plan should include specific documentation of how resource agency goals and priorities are incorporated into the transportation plan.

Second, the data sets used to integrate environmental considerations into the transportation plan should be documented. A major challenge for integrated planning is the degree of completeness and compatibility of the data, (usually the GIS data layers) that are available. However, identification of assumptions and modeling based on known information will enable durable decisions to be made in planning, with the level of data that exists. Too frequently, type, unavailability, or lack of data becomes an excuse to avoid decisions when, in fact, partial or tiered decisions may be appropriate. Documenting the data sets that were used and the conclusions drawn from them during the integrated planning phase of PEL will help avoid confusion and potential inconsistency during the linking planning and NEPA phase.

Successful linking of planning and NEPA requires comprehensive and acceptable documentation from the planning process to the NEPA process. This level of documentation will typically exceed what is generally required to meet the legal requirements and/or best practice for long-range planning. NEPA is a procedural law, meaning that the legal standard used is based on the quality and completeness of the process to reach decisions. The Environmental Assessment (EA) or Environmental Impact Statement

(EIS) will be judged by the standards applicable under the NEPA regulations and guidance from the Council on Environmental Quality (CEQ). Therefore, any planning data or decisions incorporated in these documents must meet NEPA and CEQ standards.

The intent is not to require NEPA studies during the transportation planning process. Rather the goal is to document planning-level information to NEPA standards so this information can be appended or referenced in the final NEPA document. While this may create additional work during planning, the documentation helps avoid revisiting decisions or re-doing work under NEPA.

Planners must understand the documentation standards required. Transportation planners should meet with the environmental professionals that do the NEPA review to agree on standards. This is not a “one size fits all” discussion. The type and level of documentation may be very different for each step of planning based on the type of information (data, analyses, or decisions) transferred and how it will be used. For example, documentation for the needs analysis of a specific project included in the long-range plan is very different from what is required to eliminate an alternative during any NEPA analysis.

The PEL Puzzle

While the transfer of data, analyses, or decisions may create a Planning and Environment Linkage, questions such as the following may remain:

- What data, analyses, or decisions should be transferred?
- Where in the “supplying” process should the information be transferred?
- Where in the “receiving” process should the linkage be made?

The purpose of the PEL puzzle graphic in Exhibit A is to help organize this guide to answer these questions.⁵ The puzzle includes specific steps for where the transfer of data, analyses, or decisions is made and linkages created (working from the outer ring to the center of the puzzle):

- Resource conservation and management;
- Transportation planning; and
- NEPA environmental analysis and review.

This guide includes a series of sections that describe these linkages. The puzzle does not show all the steps in these processes, rather it shows specific steps where there is a PEL linkage. The PEL puzzle will be used to illustrate each linkage subsequently described.

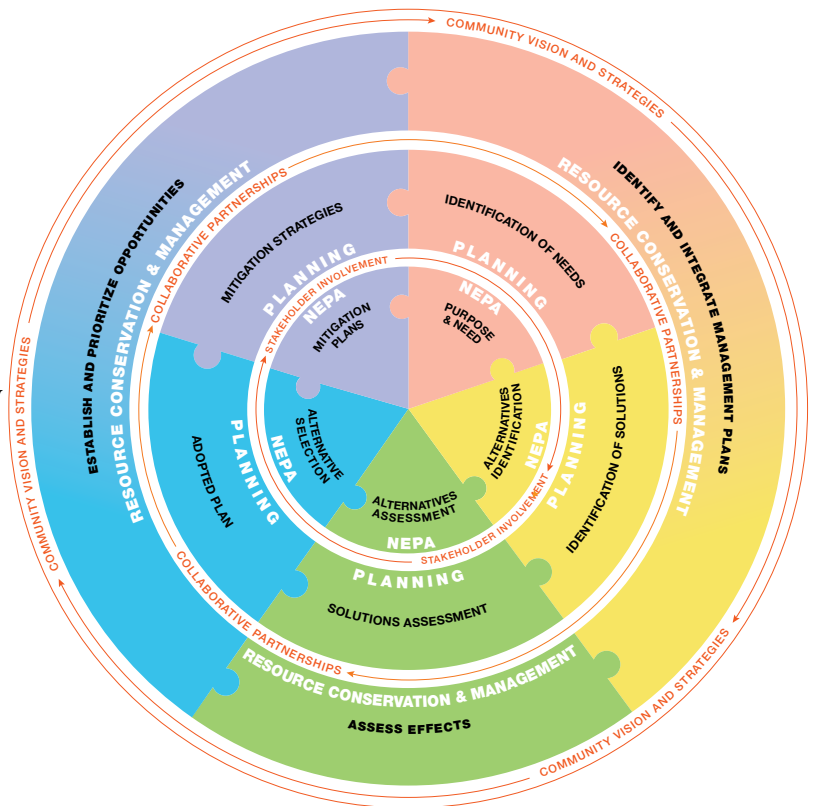
How Does PEL Begin?

In theory, PEL is simple—just transfer information from one planning process to another. In practice, however, it is not that easy. Simply providing information from one process to another does not necessarily assure that information will be used and a linkage will be made.

A transfer of information does not mean that agencies understand the information or are able to incorporate it into their decision-making process. Agencies need to have a relationship for the transfer to work. To illustrate the importance of these relationships, the PEL puzzle graphic in Exhibit B shows three concentric relationships that run throughout PEL: community vision and strategies, collaborative partnerships, and stakeholder involvement. These three fundamental themes permeate other linkages.

At its core, the goal of PEL is to assure that, as the landscape is changed to support transportation

Exhibit A



improvements, we are respectful of the natural systems and processes that make up the environment. PEL is based on a tri-party partnership between the community, transportation agencies, and resource agencies. These parties must understand each other’s mission and goals and respect the role and responsibilities that each brings to the table. A collaborative partnership is based on these fundamentals.

On the surface, the mission and values of the various participants in PEL are very different. Without a collaborative partnership in place, they can create very different and conflicting outcomes. In the end, however, all parties are seeking one goal—a high quality of life for the communities impacted by decisions.

⁵ The PEL puzzle graphic is a variation of that used originally by the Colorado Department of Transportation.

A community’s vision and strategies are established and continually validated through stakeholder involvement. When there is a collaborative partnership in place, the community vision and strategies will respect and incorporate goals for both natural resources and transportation. It is a “both/and” approach, instead of “either/or,” and it reflects stakeholders’ integrated thinking on these matters, not separating everything out into jurisdictions and regulatory or functional area “silos.”

Thus, PEL begins by:

- Grounding everyone’s planning and understanding the community’s vision and strategies;
- Developing relationships among planning partners so individual plans can be integrated; and
- Validating these efforts through on-going dialogue with stakeholders.

These steps assure that information provided really makes a difference in the work that is done and the decisions that are made.

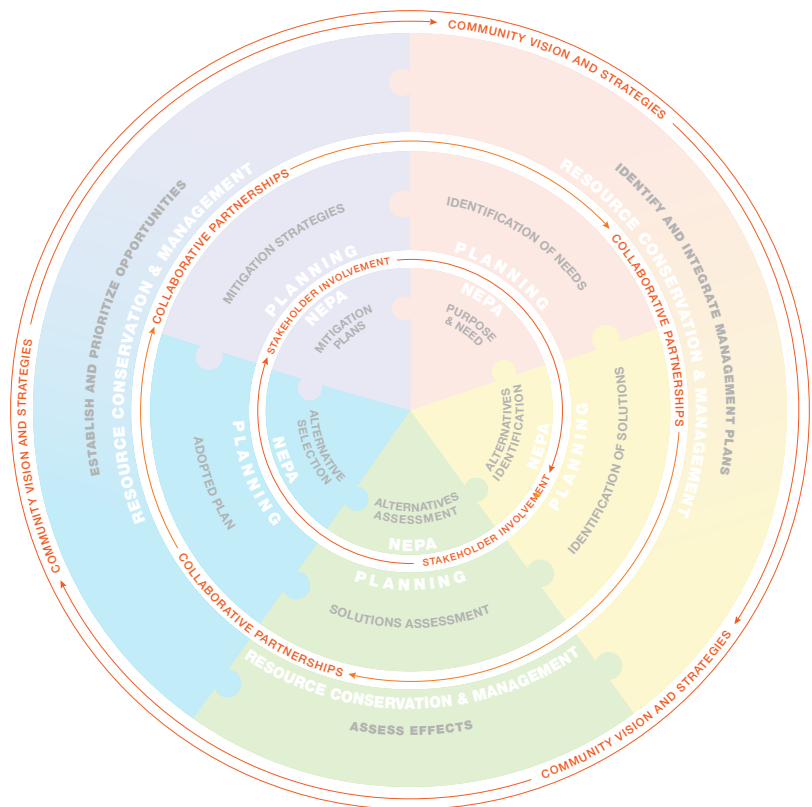
Community Vision And Strategies

The community vision and strategies should be the basis for all transportation decision-making starting with long-range planning through environmental analysis, design, and eventually implementation of transportation projects and services. In addition, these should be the foundation for all community planning processes such as land use, transportation, and economic development. They can inform all related planning processes such as conservation, watershed, and private land development decisions. The community vision and strategies can tie together all

public and private decisions to create the quality of life that the citizens desire.

The community vision and strategies imply seeking agreement about the desired outcome of a program or project and articulating the kind of community its residents want—5, 10, or 20 years into the future. This agreement is not always easy to articulate. A community’s vision and strategies are the ideal and may change over time. A community should revisit the visioning process periodically to reaffirm where it is heading, ideally through a collaborative stakeholder involvement process that draws all segments of the community into a dialogue about their collective future.

Exhibit B



Collaborative Partnerships

While state DOTs play a significant role in the transportation decision-making process, MPOs are also responsible for a substantial portion of the planning and resource agencies are responsible for a major part of the environment. Collaboration is therefore needed to implement PEL and achieve a community's vision of the future.

Collaborative partnerships establish mutual understanding of roles and responsibilities among formal partners—the state DOT, FHWA, FTA, resource agencies, and MPOs and/or local governments. This is not an easy goal to accomplish. Often the mission and goals of transportation and environmental agencies are perceived as mutually exclusive. The public wants good transportation and a clean environment. They expect cooperation from public servants in charge of these areas. This cooperation is built on respect and trust. It requires relationship building and takes time and commitment from all partners. The benefits of collaborative partnerships though are numerous. They include:

- Enhanced quality of life in our communities and environments. Collaboration supports integrated planning and project development. Integrated planning can enhance the quality of life for communities as all parties share their goals, priorities, and needs from the very beginning of the decision-making process. This quality of life includes, among other features, cleaner and more diverse natural environment, social and economic health and vitality, and a better transportation system.
- Time and money savings. Agencies can often avoid conflict, duplicative work, and frustration during transportation decision-making when they understand their partners' goals and needs. This understanding results in savings of time

and money for the transportation agency and all of its partners. Streamlining the project development process results in quicker permitting decisions. It brings about transportation projects with better environmental outcomes.

- Identified resource and regulatory agencies' responsibilities may affect future projects, provide an opportunity to address potential conflicts early, and develop mitigation strategies that can provide for more seamless transportation project development. By cultivating a shared vision through earlier and more effective communication, greater environmental benefits can be accomplished, while minimizing costs and delays in project development. Early collaborative involvement can minimize the contentiousness of issues that might surface when the resource agencies are engaged later in NEPA permitting.
- Better protection for resources through early discussion of issues and priorities. Success depends on more than just bringing the environmental, regulatory, and resource agencies to the table during the long-range planning process. The best stewardship of the resource is to avoid harm in the first place. If the resource cannot be avoided, then minimize harm to the maximum extent possible. Where the resource cannot be avoided, and where minimization leaves harm to the resource, mitigate or offset the harm. In addition, sound environmental stewardship requires that on all projects decision-makers be mindful of environmental enhancement opportunities, and take advantage of them when appropriate.
- Comply with CEQ regulations and Title 23 processes. CEQ regulations encourage agencies to integrate the NEPA process with other

processes at the earliest possible time. U.S. Code Title 23, Sections 134 and 135 provide specific direction requiring consultation with resource agencies, such as those responsible for land use management, natural resources, environmental protection, and conservation and historic preservation in the development of long-range plans.

Stakeholder Involvement

PEL requires changes in stakeholder involvement as traditionally conducted by state DOTs. With a plethora of publicly available information via electronic media, today's public is very informed. Public officials now spend part of their day talking with the community and relaying what they hear back into their agency's work. This new form of stakeholder involvement is integral to all planning and project. It ensures that strategies and goals developed during individual processes are consistent with a community's vision for its quality of life.

With PEL, we also look at how to link stakeholder involvement as it moves from one planning process to the next. Stakeholder involvement is one of the most important linkages created. Failure to link stakeholder involvement may cause frustration and disengagement from the public over time, which could carry over from project to project.

Soliciting stakeholder input is more than an agency requirement and more than a means of fulfilling a statutory obligation. Meaningful public input is central to good decision making. With meaningful public input, it is possible to make a lasting contribution to an area's quality of life, deliver projects that the public really wants, and resolve transportation needs. Linking public involvement between phases of project development validates the legitimacy of prior public involvement and acknowledges that public input is being carried forward in future activities. Credibility with the public is essential to increase

participation; building on previous efforts reinforces that credibility.

In the past, each team of transportation professionals approached the public with a clean slate, as though no one had asked their views before. In actuality, the public is asked for their opinions on transportation projects many times by various parts of the same entity (such as a DOT) and by other government agencies. The public may become frustrated and disengaged, especially if it is asked the same questions repeatedly, seeing no beneficial outcome. Even when the questions are different, it can help build credibility with the public if prior involvement and outcomes are acknowledged as part of the new process.

Without meaningful public input throughout the entire process there is a risk of making poor decisions, or decisions that have unintended negative consequences. However, there are many challenges to conducting robust public involvement. Some of these include:

- A struggle with getting public input that is truly representative of the community it serves, particularly from those persons traditionally underserved by existing transportation systems (e.g., low-income or minority households).
- Public skepticism about the ability to influence the transportation decision-making process.
- Public difficulty in relating to plans (as opposed to tangible projects), at whatever stage in the process, because the plans are too abstract and long-term to capture and maintain the public's attention.
- Creating mechanisms and opportunities to assure that the feedback portion of public involvement is implemented.
- The participants in the public involvement process change over time so it can appear that

public views are different from one process to the next.

- Educating the public on the various stages of the process and the decisions that are currently on the table for discussion (for example, during long-range planning it is rarely possible to show right-of-way impacts to individual properties).
- Establishing approaches and techniques to reflect prior public involvement input as the starting point for each new planning process (as opposed to the “clean slate” approach).

The basis for stakeholder involvement is assuring that the public involvement process is always state-of-the-practice. A robust public involvement process is the standard for PEL. This assures the best outcome. Reaching out to the public, however, is only half of a public involvement process. Incorporating what the public says into the decision-making process and providing feedback to the public on how their views influenced the final decision is essential. This approach assures that there are continuing opportunities throughout the entire

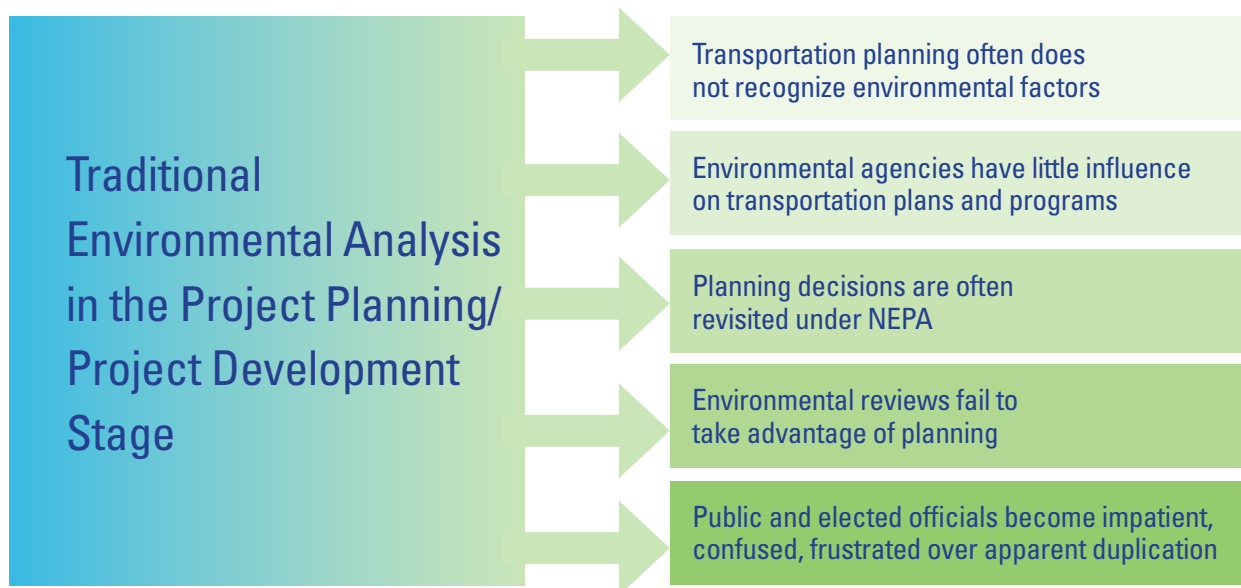
planning and project development process for the public to be involved in the decisions over a broad range of social, economic, and environmental issues that affect their quality of life.

Challenges and Benefits of PEL

PEL streamlines the decision-making process. It encourages transportation and resource agencies to share data and tools, perform coordinated analyses, and improve their communication—overcoming many of the traditional challenges encountered (see Figure 2).

PEL entails additional work early in the planning process. This may mean that staff at planning agencies may be pressed for time, creating an additional hurdle. PEL requires both transportation and resource agencies to step back from their traditional approach and consider something new—the mutual benefit of a broad partnership. It may be difficult for everyone to switch gears and try an unfamiliar approach where there may be a learning curve or increased time constraints. Thus, PEL may

Figure 2



require significant changes both internally and externally. It demands a broad perspective, cultivating new relationships, and forging new partnerships and agreements. In order to make such a transition, it may be beneficial to understand the challenges and benefits to these linkages.

Real Challenges

PEL requires more environmental work in planning and increased awareness and knowledge from all parties involved. Planning practitioners will need to become more familiar with the environmental process and environmental experts will need to become conversant in the transportation planning process.

PEL will shift some costs from the NEPA stage to long-range planning, particularly those associated with development of the Purpose & Need statement, evaluation criteria, and alternative development and analysis. While these processes will still be required when NEPA begins, the level of effort required should be reduced because a baseline would be established during planning. Integrated planning may create an entirely new cost, but one that should create efficiencies in NEPA, environmental permitting, and overall effectiveness at achieving transportation and other agencies' missions.

PEL may require a significant change to existing working relationships. Planning, environment, designers and resource agencies will need to collaborate and communicate more. This enhanced relationship will inevitably require more time of everyone. PEL also requires more resources for metropolitan planning organizations and other planning agencies. Despite these many challenges, creating linkages between planning and the environment can have some significant benefits.

Process-Efficiency Benefits

PEL leads to a more efficient process. Improvements to inter-agency relationships may help to resolve differences on key issues as transportation programs and projects move from planning to design and implementation. Conducting some analysis at the planning stage can reduce duplication of work, leading to reductions in cost, time, risk, and later environmental requirements. For example, by developing the Purpose & Need Statement and foundation for alternative analysis during long-range planning, practitioners can:

- Reduce the amount of time in NEPA to develop Purpose & Need and screening criteria;
- Allow multiple projects in a corridor to use the same Purpose & Need and alternatives screening criteria; and
- Provide clarity of intention, for input by local agencies, planning partners, and the public.

Relationship-Building Benefits

By enhancing inter-agency participation and coordination efforts, transportation agencies establish a more positive working relationship with resource agencies and the public. For instance, by engaging policy-makers and the public early on, agencies can reduce the potential for conflict later. Agencies can identify transportation system needs, develop solutions, and propose potential mitigation strategies.

Transportation agencies can get better information on environmental issues and can reduce the potential for conflict by engaging resource agencies early in discussions. This includes thorough and early identification of protected or important resources, resource agency priorities, and associated environmental data. By engaging interested parties early in the process, agencies enhance public understanding of the overall process and maintain timely interest and involvement.

On-the-Ground Outcome Benefits

When transportation agencies conduct planning activities equipped with information about resource considerations, they are better able to form programs and projects that serve the community's transportation needs effectively. This provides the opportunity to avoid and minimize impact on natural resources, and enables effective environmental stewardship.

Resulting benefits include:

- Eliminating potential duplication of planning and NEPA processes, creating one cohesive flow.
- Rational decision-making, considering the widest view, and effective public expenditures.
- Cooperation, collaboration, and leverage of what each agency can do best, and do for each other.
- More accurate project cost forecasting.
- Greater predictability and tighter timeframes in project delivery.
- Enhanced environment.

PEL results in benefits over the traditional analysis of environmental issues in the project development phase by providing an integrated approach to transportation decision-making.

Is PEL Legally Required?

Current federal transportation law supports PEL. U.S. Code Title 23, as amended by the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), the federal surface transportation act for years 2005-2009, requires many activities previously considered “good practice”—those that strengthen consideration of environmental issues and impacts within the transportation planning process and encourage the use of planning products during NEPA.

SAFETEA-LU also ventures into new areas such as asking for the use of visualization techniques and a new level of dialogue and interaction with the public (participation plans for stakeholder involvement) in discovering, describing, and analyzing strategies.

Environmental Considerations In Planning

Specifically, SAFETEA-LU Sections 3005, 3006, and 6001 require that:

- The transportation planning process provides for actions and strategies that protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and state and local planned growth and economic development patterns.
- Statewide and metropolitan transportation plans be developed in consultation with federal, state, tribal, and local agencies responsible for land-use management, natural resources, environmental protection, conservation, and historic preservation.
- This consultation involves a comparison of transportation plans with state, tribal, and local conservation plans, priorities, and maps, if available; and with inventories of natural and historic resources, if available; and
- Transportation plans include a discussion of potential environmental mitigation activities and potential areas to carry out these activities.

Participation plans for stakeholder involvement and use of visualization techniques to convey proposed strategies are also discussed. The requirements are formalized in the Statewide Transportation Planning; Metropolitan Transportation Planning; Final Rule (23 CFR 450), which details how results or decisions of transportation planning studies may be used as part of the overall project development process consistent with NEPA.

Appendix A to Part 450—Linking the Transportation Planning and NEPA Processes (23 USC 139) describes how information, analysis, and products from transportation planning can be incorporated into and relied upon in NEPA documents under existing laws. In essence, Title 23, as amended by SAFETEA-LU Section 6001, establishes the legal requirement for Integrated Planning and provides the legal foundation for Linking Planning and NEPA.

Efficient Environment Review For Project Decision Making

The Final Guidance on Section 6002 (23 USC 139) establishes a new environmental review process for highways, transit, and multi-modal projects that:

- Requires a new public comment process on Purpose & Need and the range of alternatives;
- Encourages more participation from agencies and organizations;
- Defines more formal roles for state, local, and tribal agencies in the process;
- Makes funding available for resource agencies to contribute to process improvements for activities that expedite and improve transportation planning and project delivery; and
- Encourages and strengthens collaboration among transportation, resource, and local agencies during the NEPA process.

How Does PEL Fit With Program-Level Work?

In non-urban areas, there is no federal requirement to do a project-specific long-range transportation plan. In these areas, the planning process often begins with the identification of a transportation need and proposed improvement, a corridor study, or a programmatic EIS. A programmatic, or first-tier, EIS is an environmental impact statement that looks

at solutions in a broad sense, such as corridor-wide highway improvements. A subsequent project level, or second-tier, EIS would then look at project-level improvements. This approach applies to large or particularly complex transportation projects in urban areas. Specific project planning often begins with corridor studies or some variant of tiered environmental work. Under these circumstances of program-level work, linkages between planning and the environment have routinely been initiated.

Corridor or programmatic studies often evaluate and compare high-level transportation solutions (e.g., highway, transit, etc.) or examine broad “classes” of technology (e.g., vehicle mode) to determine what course of action is locally preferred. In large, urban areas, it can be particularly beneficial to undertake a corridor study in advance of allocating funds to specific projects (e.g., alternatives can be eliminated).

In a corridor study, the focus is on a subarea of the region, in both analysis and the development of strategies. On the other hand, a programmatic EIS is more structured and formal than a corridor study since it follows the procedural requirements of NEPA. However, both corridor studies and programmatic environmental impact statements include necessary elements to link the planning process to NEPA.

Both studies promote a system of decision-making beginning with a high level of analysis, followed by a process similar to a project-level EIS. However, in the normal planning process to date, the data used and the level of analysis do not match the level of detail required in the project-level NEPA process. Many decisions therefore will be made based on other available data, for instance GIS-level data. This may include the following:

- Need for the project
- General location

- Identification of multi-modal technologies, if any
- Community vision context
- Land use context
- Environmental context
- Air quality context

This analysis, though at a higher level, still supports a PEL approach. The fundamental goals of developing partnerships and achieving a balanced decision-making process are unaffected. In fact, when done correctly, corridor studies and programmatic environmental impact statements can be used to streamline work typically done during a project-level NEPA process. Subsequent documents need only summarize and incorporate discussions from the prior work done in the NEPA document. This allows decision makers to build on previous decisions.

Emerging Issues In PEL

Planning and the environment are intricately connected. As new issues emerge in either planning or the environment, new linkages should be investigated. Some examples of emerging issues that have potential linkages include how best to address freight movement within the planning process, the heightened attention paid to climate change, and the renewed emphasis paid to non-motorized transportation strategies.

Freight in the Planning Process

Freight transportation has increasingly emerged as an important part of the planning process, especially as our economy has become tied to the global market. State DOTs and MPOs became responsible for

making sure that freight movement is considered in the planning process when the Intermodal Surface Transportation Efficiency Act was enacted in 1991. Traditionally few agencies identified freight-specific projects that could be programmed, developed, and implemented. Moreover, in the past two decades, the global freight market has grown rapidly and changed. Many regions around the country have become increasingly reliant on freight transport as a mean to their economic development.

Likewise, many of these regions have increasingly recognized the impact that freight transport has on the overall health and efficiency of the transportation system. Metropolitan areas (especially ports), with their air cargo airports, intermodal freight yards, large trucking terminals, and shipyards, are especially affected by freight movement issues.⁶ Many states and MPOs have begun to develop freight planning programs.

Nonetheless, much of freight planning has been outside of a typical long-range planning process. Goods movement via rail, air, and marine modes has been driven largely by the private sector, although some regions have taken a more active approach by building statewide or metropolitan pictures of freight movement through the development of stand alone, integrated, multimodal freight plans. Still others have begun to develop analytical tools or freight data collection programs to develop freight performance measures or to help guide a broad freight policy and statewide/regional transportation investment decisions.⁷

Logical linkages to this work include highlighting the environmental benefits associated with integrating freight in the planning process. Investments made in freight transportation could

6 The Transportation Planning Process: Key Issues. The Transportation Planning Capacity Building Program. Federal Highway Administration, Federal Transit Administration. Updated September 2007.

7 Freight Planning Capacity Building workshop. U.S. Department of Transportation, Federal Highway Administration. <http://www.fhwa.dot.gov/freightplanning/freightworkshop.htm>.

have beneficial impacts on the environment when freight and environmental considerations are integrated throughout the planning, programming, and project development processes. For instance, identifying environmental considerations early could help in the locating of key freight corridors and facilities. In addition, since freight-related outreach strategies differ from traditional public outreach techniques, transportation planners could encounter different stakeholders and perspectives, adding value to separate planning efforts. Finally, integrating freight within the planning process could ensure consistency with state implementation plans and air quality conformity as freight is a major contributor of air pollutants. In short, linking freight with planning and the environment could have far-flung impacts to mobility, economic competitiveness, and general quality of life.

Climate Change

Over the last decade, climate change has received increased attention by the media and in scientific, political, and economic circles worldwide. Climate change is a change in the average weather of the Earth that can be measured by wind patterns, storms, precipitation, and temperature. Human influence, including our energy production and certain industrial and agricultural practices, is likely a significant contributor to this change—the consequences of which are potentially catastrophic. Climate change is perhaps the greatest environmental challenge facing us today.

Transportation agencies around the country have begun integrating climate change with their planning processes. They have increasingly begun to analyze mitigation strategies to reduce emissions, and

evaluate environmental impacts associated with climate change that may occur because of transportation projects. Unlike other linkages between planning and NEPA though, this connection has been made without much guidance or supporting PEL documentation.

Transportation agencies have had to elevate climate change as an issue on their own. To date, there is no specific federal mandate to consider climate change in transportation planning. There is no formal regulatory guidance available at either the state or federal level on addressing climate change impact in the NEPA process. Although the U.S. Supreme Court recently held that the Environmental Protection Agency (EPA) has authority to regulate greenhouse gas emissions, the EPA has yet to develop any regulations.⁸ Essentially, there are few documented ways to create Planning and Environment Linkages when it comes to climate change; thus, agencies have resorted to what is reasonable. This either has meant addressing the issue in stand alone sections on climate change or in other sections (e.g., air quality analysis, cumulative impacts discussion, etc.).

Agencies that have addressed global climate change have taken several strategies, including emphasizing linkages made in the following approaches:

- Reducing greenhouse gas emissions through community planning, increasing transit ridership and vehicle occupancy, minimizing travel demand, and maximizing transportation system efficiency.
- Planning for the potential impact of global climate change on transportation systems by building capital reserves for enhanced infrastructure

⁸ In April 2007, the U.S. Supreme Court ruled in *Massachusetts v. EPA*, 549 U.S. 1438 (2007), that the EPA must take action under the Clean Air Act regarding greenhouse gas emissions from motor vehicles and that states have standing to sue if the EPA does not take action. Most greenhouse gases are naturally occurring, including water vapor, carbon dioxide, methane, and nitrous oxide.

- Improving vehicle fuel economy or switching to alternative fuels
- Improving traffic flow and enhancing operations (e.g., reducing bottlenecks and the potential for accidents)
- Reducing the energy intensity of construction materials and methods
- Addressing climate change in agency operations (e.g., reducing the use of electricity in buildings and outdoor mechanical and electrical systems, procuring recycled and less energy-intensive products for administrative and physical functions, etc.)

Non-Motorized Transportation

Considering non-motorized transportation strategies in the planning process has also increased in importance over the last several years. Non-motorized transportation is primarily walking, whether on foot or by wheelchair, and bicycling. Strategies include improving sidewalks, crosswalks, paths, and bike lanes, as well as applying forms of universal design or traffic calming measures. Strategies are usually implemented by local governments with funding provided by regional or state agencies. Increased attention is partly due to environmental and public health concerns.

On the environmental front, non-motorized strategies in planning have become more attractive as a means to meet emissions standards under the federal Clear Air Act. People in walkable neighborhoods drive

less—reducing traffic congestion and lowering vehicle miles traveled. Plus, neighborhood walkability is linked to fewer per capita air pollutants and greenhouse gases.⁹

A secondary benefit is improved public health. For roughly 20 years now, planners have examined the relation between the built environment and travel choices made by the public, including the choice to walk or cycle instead of drive.¹⁰ More recently, researchers have begun to look at these choices especially as they relate to the issue of public health.

Declining physical activity is linked to worsening health. Recent studies show a clear association between the type of place people live and their activity levels, weight, and health.¹¹ Where driving is convenient and non-motorized transportation options few, unhealthy characteristics in the form of obesity rates and hypertension are observed.¹² Thus, researchers have increasingly been looking at the effect that transportation facilities and available transportation options have on public health trends.¹³

In response to public health concerns, transportation agencies have acted. For example, at the request of several state DOTs, the Federal Highway Administration and Federal Transit Administration convened a roundtable several years ago on “Integrating Health and Physical Activity Goals into Transportation Planning.” FHWA manages two programs, SAFETEA-LU Sections 1404 and 1807 (Safe Routes to School and the Non-Motorized Transportation Pilot Program, respectively).

9 Goldberg, David et. al. *New Data for a New Era: A Summary of the SMARTRAQ Findings*. January 2007. http://www.act-trans.ubc.ca/smartraq/files/smartraq_summary.pdf freightplanning/freightworkshop.htm.

10 Ewing, Reid. *Building environment to promote health*. *Journal of Epidemiology & Community Health*. January 20, 2003.

11 Ewing, Reid and McCann, Barbara A. *Measuring the Health Effects of Sprawl*. Smart Growth America Surface Transportation Policy Project. September 2003.

12 Ibid.

13 Among the problems cited by public health advocates, trends have been worsening in terms of obesity rates, cases of diabetes, cardiovascular disease, depression and anxiety, as well as poorer development and maintenance of bones and muscles, especially among children.

Moreover, some state DOTs now include health concerns in their long-range planning.

Local jurisdictions have been more aggressive. Cities such as Davis, California and Portland, Oregon have prioritized non-motorized options in its transportation planning. Davis has more bikes than cars, and was the first community in the U.S. to earn platinum status on Bicycle Friendly Community's list of top cities.¹⁴ Portland's Create-a-Commuter program is the first project in the U.S. that provides low-income adults with commuter bicycles. In addition, Seattle, Washington is experimenting with vehicle-free zones, temporarily closing city streets to cars, motorcycles, and scooters, but keeping them open to pedestrians and cyclists.

For PEL, the most logical place to connect is at the statewide planning level—in solutions screening for programming and in analyzing alternatives in project development. Linkages could be made in system plans or long-range planning documents, visions, and policies. Potential linkages can also occur at the STIP, how projects are selected for the STIP, and in the project alternatives analysis and documentation process. Linkages may focus on the interaction between transportation and land use patterns on habitat connectivity, water quality, and other environmental impacts, as well as impacts on human health associated with different levels of physical activity associated with different types of development and transportation patterns.

¹⁴ League of American Bicyclists. <http://www.bicyclefriendlycommunity.org/>

Integrated Planning

Integrated planning is an approach that recognizes the continuing need to link short, as well as, long-range transportation planning and corridor level planning studies performed by state and local governments to the planning processes performed by resource conservation and management agencies.

Integrated planning is a collaborative, well-coordinated decision-making process that solves the mobility and accessibility needs of communities. It meets multiple community goals—from economic development and community livability to environmental protection and equity. In short, integrated planning provides users of transportation systems more choices and more information. The linkages it creates can be enduring and be valuable in a variety of ways.

Exhibit C shows three linkages. The outer, multicolor circle shows steps taken in resource planning where information is communicated and linkages to transportation planning can be made: (moving clockwise) identify and integrate management plans, assess effects, and establish and prioritize opportunities. The middle puzzle pieces show four corresponding steps where that type of information is used in the transportation planning process. The linkages between these processes represent integrated planning.

This graphic does not show all the steps in these processes, rather it shows the specific steps where there is a PEL linkage. The following sections describe these linkages.

Exhibit C



Linking Resource Plans With Transportation Needs and Solutions

The first of these linkages can be made by connecting the stage in resource conservation and management, where resource and land use agencies identify and integrate management plans, with the stage in transportation planning, where MPOs and state DOTs identify transportation needs and potential solutions (see Exhibit D).

What Is the Linkage?

Identify state/local resource conservation and management plans, land use plans, and any other

planning documents that have been developed and link them to the identification of transportation needs and solutions during planning.

Why Make the Linkage?

Resource conservation and management plans will be particularly useful in considering potential solutions for both resource and transportation agencies.

This linkage would:

- Provide initial common understanding among partner agencies.
- Support the development of potential solutions that meet multiple natural resource and community goals.
- Identify potential solutions that conflict with endorsed or adopted goals and could be eliminated from further consideration.
- Establish partnerships that can support implementation of cross-cutting opportunities or solutions identified in plan recommendations.

What to Consider?

- Each agency may be familiar with its own data and planning information. Other data and plans may be relatively unfamiliar. Questions, answers, and discussions about common goals and terminology helps bridge those gaps.
- Plans may vary in format and level of detail which could complicate making fair comparison and achieving mutual understanding.
- Multiple stakeholders, whether acting as a group or individually, may slow the planning cycle, making it difficult to meet deadlines. Positive and early involvement

focused on opportunities can generate new levels of enthusiasm, interest, and collaboration.

- Creative agreements or understanding can expedite later stages.

What Data Informs This Linkage?

Planning data may include information from the following:

- Previously adopted long-range transportation plans
- Overall community vision
- Planned land use and development
- Community economic development plans

Exhibit D



- Air quality context
- Multi-modal plans or considerations
- Roadway deficiency data
- Population and employment data (e.g., demographic trends)
- Transportation demand and traffic forecasts
- Established management systems (e.g., congestion, pavement, bridge, safety)
- Documentation of public/stakeholder involvement process
- Environmental data may include information from the following:
 - State wildlife conservation plans or strategies, typically produced by the State Wildlife or Fish and Game Departments.
 - Local and regional watershed plans.
 - Eco-regional conservation plans developed by organizations such as The Nature Conservancy, in consultation with agency specialists.
 - State natural heritage program species occurrence, distribution, and habitat quality data.
 - Measures or mapped statewide biodiversity health assessments, if available.

Analysis and Documentation

- Analyze opportunities and limitations presented for each plan and associated environmental regulations.
- Document all plans considered with relevant information on effective dates, adoption, and other identifying characteristics.
- Summarize consideration and decisions reached.
- When information is provided in GIS or other technically compatible format, provide this data to the MPO transportation planning staff for further analysis.

- Provide signatures of representatives involved to document agreements and further actions needed.
- Document interagency agreements reached on opportunities in which community and resource management plans link to identification of needs and solutions.
- Modify descriptions of needs and solutions for transportation purposes, as needed.

What Technical or Policy Team Decisions Help Make This Linkage?

State and local transportation planning agencies provide the technical analysis. Policy makers for the MPO may endorse the tool or identified solutions.

Linking Assessed Effects With Planning Solutions

Another step where a potential linkage can be made is in the assessment stage—connecting the assessment of environmental effects during resource conservation and management with the assessment of transportation solutions during the planning stage (see Exhibit E).

What Is the Linkage?

During the technical analysis necessary to evaluate potential transportation solutions, agencies need to assess the environmental effects of the different solutions being considered. Assessing the environmental effects is needed for early identification of mitigation strategies for avoidance and minimization, and potential mitigation solutions.

Why Make the Linkage?

This action would:

- Provide a broad-brush environmental analysis during the planning solutions assessment process to identify where potential mitigation is required, to ensure continued viability of preferred solutions.
- Provide an opportunity to begin the identification of indirect and cumulative effects at a regional level. Such actions as the determination of an appropriate boundary, identification of data currently available for this analysis, and identification of data needed prior to project development could be initiated in systems planning.
- Support a more robust analysis of potential plan recommendations.
- Allow a more complete understanding between planning partners of the mission, requirements, and challenges of the various agencies.

What to Consider?

- Deciding the tools, target resource, and scope to use for cumulative effects analysis. Different areas are often analyzed for different affected resources.
- Analysis tools may not be sufficient to analyze multiple effects to the level resource agencies anticipate at the project level. Nevertheless, an effort should be made to determine the analysis that can be practicably accomplished on a planning level.
- Planning partners may be reluctant to accept analysis done by others.

What Data Informs This Linkage?

The primary analysis tool at the transportation planning level is the travel demand model. The travel demand model uses information such as roadway and transit networks and demographic data to calculate the expected demand for transportation facilities. For use of more qualitative information, other decision support tools or processes may be used. Environmental data could be acquired from natural resource agencies and organizations. Data such as wetland locations, natural heritage sites, and historic properties should be considered.

Exhibit E



Analysis and Documentation

Traffic analysis that supports solutions for identified needs must meet federal requirements. It is not permissible to use a less technically sophisticated analysis in order to include additional considerations. Therefore, it may be necessary to develop associated processes for analysis of environmental considerations rather than provide a direct interface with the travel demand model. Documentation of analysis results is necessary to support plan adoption as well as to lessen the possibility of repeating analyses in future project considerations.

Indirect and cumulative effects analysis in planning should be documented on a broad regional scale and then carried forward in project development as a reference on a project-by-project basis. A key purpose of performing this analysis in planning is to identify not only effects, but also reasonable mitigating actions. State DOTs and MPOs are not required to mitigate for indirect and cumulative effects as a part of the long-range planning cycle; nevertheless, efficient and effective opportunities to do so, for future projects or historical impacts, may be identified in planning.

A number of state DOTs have chosen to respond to and act on indirect and cumulative effects as part of the transportation agency's environmental ethic and stewardship commitments. This involves documenting the analysis, decision, and action and then following through on the action, which may entail programming non-traditional projects, such as those that ameliorate water quality or restore wetlands, watersheds, or habitats.

What Decisions Help Make the Linkage?

State and local transportation planning agencies provide the technical analysis. Policy makers for the MPO endorse the resulting recommendations

through plan adoption. Decisions and interagency agreements on effects and advance mitigation document wetland, water quality, habitat, wildlife, and threatened and endangered species strategies and approaches. The parties may agree to implement such strategies on a statewide, ecoregional, watershed, or series of site-specific scales. Local mitigation efforts can be undertaken through ordinances or agreements. For broader reaching mitigation efforts, state DOT and resource agencies may collectively elevate the intention to state-level decision-makers.

Linking Environmental Priorities With Transportation Plans

A final linkage can be made when resource conservation and management agencies establish and prioritize opportunities. Their efforts can be linked to transportation agencies when they are adopting a plan and developing potential mitigation strategies (see Exhibit F).

What Is the Linkage?

During development and adoption of the long-range transportation plan, mitigation opportunities at both the state and local level can be established and prioritized.

Why Make the Linkage?

This action would:

- Provide an opportunity for mitigation of impacts to the environment
- Allow resource agencies to evaluate the relative importance of different conservation and management areas.
- Provide citizens of the region the assurance that support of the transportation plan will not lead to adverse environmental effects or net losses.

- Allow the region to adjust or supplement the strategies identified to meet the vision.

What to Consider?

- Potential for conflicting mitigation strategies and preferences between the resource agencies and the local area.
- Actions to support the next plan update may take longer than initially intended.

What Data Informs This Linkage?

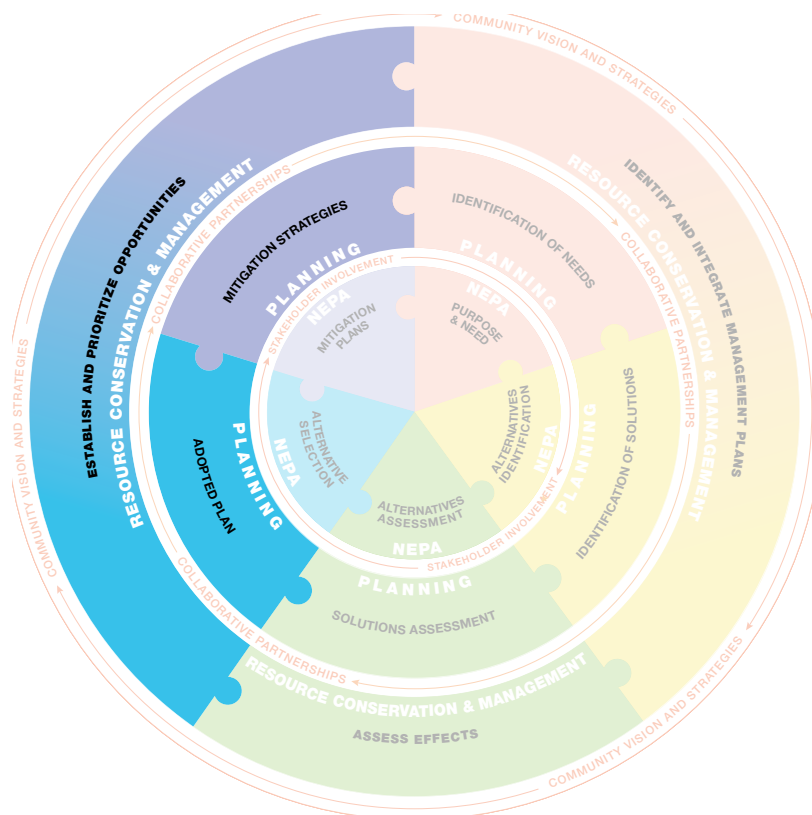
Data for this linkage includes:

- Adopted long-range transportation plan
- Integrated management plans
- Results of upper-level environmental assessment and alternative assessment

Analysis and Documentation

Documentation that supports this step is the adopted long-range transportation plan with recommendations and mitigation strategies included along with any Memorandum of Understanding or Memorandum of Agreement that is reached. Agreed mitigation strategies should be documented and reflected in interagency MOUs/MOAs, local ordinances, and/or guidance documents. Formal agreements between resource agencies and the MPO or state DOT help ensure mutual support for identified strategies and increase the effectiveness and reliability of solutions negotiated at this stage, as more project-specific detail emerges in project development.

Exhibit F



What Decisions Help Make the Linkage?

Resource conservation and management agencies, state DOTs, and sometimes MPOs negotiate appropriate strategies and priorities, in response to planning level analysis of environmental effects.

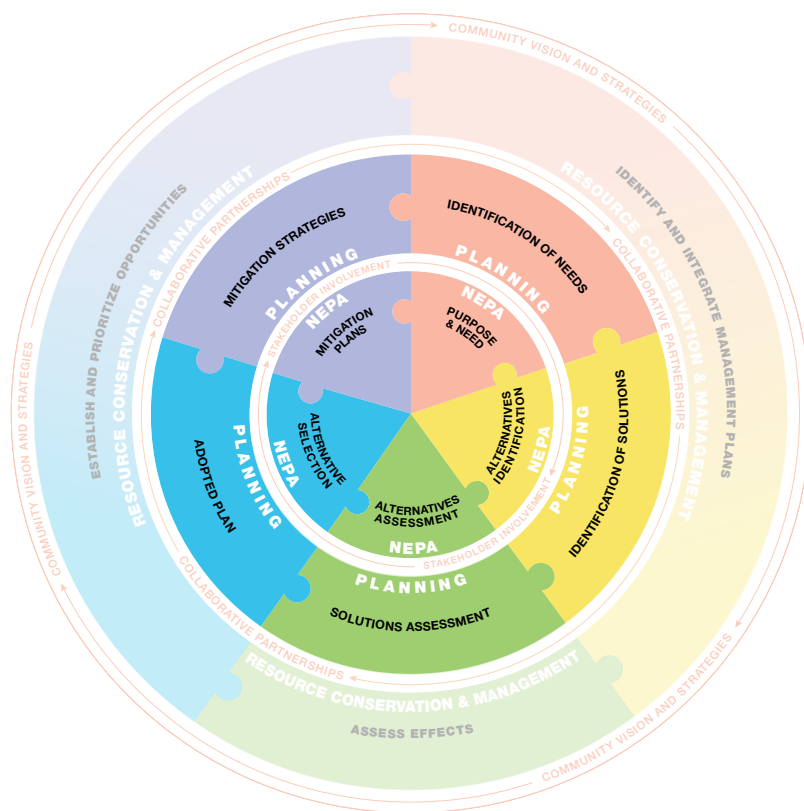
Linking Planning and NEPA

Government regulations strongly support the integration of the transportation planning process with the NEPA environmental review process. In fact, planning should rightly feed into NEPA. The regulations for implementing NEPA require integration with other planning at the earliest possible time in order to “insure planning and decisions reflect environmental values; avoid delays later in the process; and head off potential conflicts.”¹⁵

Too often though, the environmental analysis produced during NEPA is disconnected from the analysis used to prepare transportation plans, transportation improvement programs, and supporting corridor or subarea studies. Thus, creating effective linkages between these two planning processes is crucial.

Exhibit G shows five potential linkages between these two processes. The middle, multicolor puzzle pieces show various stages in the transportation planning process where decisions are made—beginning with identifying transportation needs and moving clockwise around the PEL puzzle to end with developing mitigation strategies. The corresponding most-inner pieces of the puzzle show where planning information can be linked to the NEPA environmental review process—beginning with developing the Purpose & Need statement and moving clockwise around the puzzle to end with developing mitigation plans.¹⁶

Exhibit G



Linking Planning and Environment Needs

One of the first stages where a linkage can be made is to link the identification of needs in the transportation planning process with the Purpose & Need statement done under NEPA (see Exhibit H).

15. Council on Environmental Quality (CEQ) regulations, Section 1501.2.

16. This graphic does not show all the steps in these two processes. Rather, it shows specific steps where there is a PEL linkage.

What Is the Linkage?

Develop a problem statement in the transportation planning process that can be used as the starting point for NEPA analysis.

Why Make the Linkage?

The problem statement would:

- Form a substantial core of the Purpose & Need statement required under NEPA (or its respective state environmental process).
- Communicate the context and justification for potential project concepts.
- Identify specific project concepts that will require special funding sources (e.g., tolls or public-private financing) for potential inclusion in the NEPA Purpose & Need statement.
- Save time in preparing and/or agreeing to the Purpose & Need portion of project development.

What to Consider?

- Difficulty in establishing acceptance of the concept by participants of the project development process at state DOTs and resource agencies.
- Difficulty fitting the systems level data into a NEPA defined Purpose & Need framework.

What Data Informs This Linkage?

Planning data may include information from the following:

- Background/history of the project
- Overall community vision
- Air quality context

- Justification of need
- Multi modal considerations
- Context sensitive concepts
- Roadway deficiency data
- Population and employment data; demographic trends
- Transportation demand and traffic forecasts
- Linkages to other community/state plans, other projects
- Identification of overall planning study area and any subarea relevant to the project
- Established management systems (e.g., congestion, pavement, bridge, safety)
- Documentation of public/stakeholder involvement process

Exhibit H



Analysis and Documentation

Individual problem statement or early scoping reports for selected needs/potential projects included in the plan could include information on the following, primarily using GIS level environmental data:

- History of the problem
- Community vision context
- System needs
- Land use context
- Environmental context
- Public involvement
- Linkages to other plans and projects
- Recommended study area
- Multi modal considerations
- Air quality context

One of the most valuable aspects of the linkage between identification of needs and Purpose & Need is to document the potential contribution made by the specific project, especially as it relates to the system as a whole. In particular, the Purpose & Need Statement may need to include important contributions that this individual improvement is making to the functioning of the overall system. Examples include discussing the connectivity or congestion relief offered by the project. Data and analyses from long-range planning can be used to support the inclusion of these elements.

What Decisions Help Make the Linkage?

State and local planning agencies assess the community's transportation needs relative to system performance.

Exhibit I



Linking Identified Solutions With Alternatives

A second connection point would be to link the solutions identified during planning with the alternatives identified during NEPA (see Exhibit I).

What Is the Linkage?

Develop a range of overall system solutions and individual project concepts that support the long-term goals envisioned by the community in the planning process that can be used as the starting point for identifying the reasonable range of alternatives in NEPA.

Why Make the Linkage?

The intent of this linkage is that solutions developed during planning could:

- Form a substantial core of the NEPA or state environmental process required reasonable range of alternatives.
- Determine political and community support.
- Determine whether certain alternatives should remain in order to be available for consideration as the Least Environmentally Damaging Practicable Alternative in Clean Water Act Section 404 and NEPA analysis.
- Be used to limit the range of alternatives that must be evaluated in a NEPA document.

What to Consider?

- Combining and re-combining individual project concepts into an overall systems plan can be difficult to track and document for transfer of information to the environmental process.
- Getting adequate public and agency input to minimize requests to consider new alternatives during project development.

What Data Informs This Linkage?

Categories of information that are available to help do this from the planning process include:

- Needs identified through technical analyses and stakeholder outreach.
- Overall community vision and goals.
- Transportation goals and objectives.
- Land use and other community plans.

- Environmental resource plans.
- Context Sensitive Solutions context.
- Public and agency input.

Analysis and Documentation

The purpose of long-range planning is to define the combination of improvements, infrastructure, and operations that can most effectively address the projected needs. Improvements may be grouped into solutions scenarios that represent significantly different policy decisions (examples of policy scenarios are “high road capacity investment,” “high transit investment” or “integrated land use and transportation investment”).

As the planning process continues, individual project concepts from various scenarios are combined into a locally preferred alternative that is acceptable to the community. The planning process should document all of the initial scenarios, the project concepts that address the community’s major needs (those that are likely to enter NEPA) and new project concepts that emerge as the scenario testing proceeds. While tracking these changes can be complex, it may avoid the re-analysis of an eliminated solution during the NEPA process.

What Decisions Help Make the Linkage?

Needs analyses for both the base and future year are reviewed and accepted by technical teams during the long-range planning process. Typically, policy boards review future year assumptions, data, and need analyses to validate that the planning process is reflecting the community’s vision and goals.

Linking Assessed Solutions With Alternatives

A third place to link planning and NEPA would be to link the solutions assessment done during planning with the alternatives assessment done under NEPA (see Exhibit J).

What Is the Linkage?

Conceptual solutions, including the locally preferred alternative, evaluated in planning keeps the NEPA analysis focused on reasonable and feasible alternatives and eliminates fatally flawed alternatives from further analysis.

Why Make the Linkage?

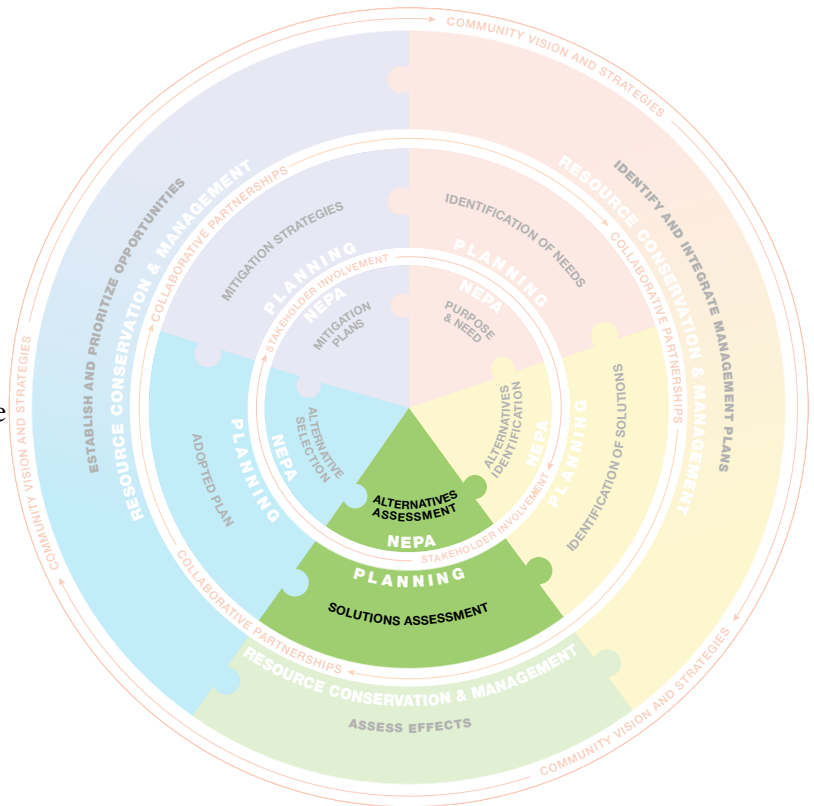
The intent of this linkage is to:

- Form a substantial core of the alternatives fully analyzed in the NEPA/state-level environmental document.
- Save time in preparing and/or agreeing to the alternatives selected for detailed study portion of project development.
- Reduce time to deliver transportation improvements to the public.
- Save money in both project development and overall project costs.
- Create a clear record of every solution considered.
- Provide the opportunity for involvement by resource agencies and other interested parties.

What to Consider?

- Developing screening criteria that reflect the community's vision and goals
- Documentation of the screening process
- Documentation of the eliminated solutions

Exhibit J



What Data Informs This Linkage?

The needs identified earlier in the process provide the data needed to identify potential solutions to the problem.

- Community vision/goals
- Economic development plans
- Transportation demand
- Safety problems
- Transportation system needs
- Threatened and endangered species
- Established communities and neighborhoods
- Local long-range plans
- System linkage

- Section 4(f) and Section 6(f) properties
- Public lands
- Rare natural features
- Watershed waters

Analysis and Documentation

Alternatives Recommended for Study Report: an individual report (not necessarily required by NEPA) of alternatives considered during planning that have not been determined unreasonable and therefore need to be carried forward for detailed study during NEPA. This report can be developed for any alternative that the local area recommends be included in the NEPA study process. One of its primary purposes, however, is to assure that the “Locally Preferred Alternative” corridor that is included in Planning is documented for inclusion in the NEPA study. GIS level environmental data is the most likely source for much of what is included in this report.

The following categories of information are included:

- Transportation evaluation (summary of alternative against the evaluation and measures of effectiveness identified).
- Facility characteristics.
- Environmental impacts (human and natural including information included in the Indirect and Cumulative Impacts summary and the Community Impacts Analysis summary developed from previous linkages).
- Impact on specially administered lands and adopted plans (for example, tribal lands, wildlife refuge lands, economic development plans, school plans, multi-modal plans, etc.).
- Air quality implications.
- Summarization of public and agency comments.

Table 2

Question to Be Asked Regarding “Unreasonable” Alternative(s)	Data Needed to Support “Unreasonable” Alternative(s)
Purpose & Need	
How does the “unreasonable” solution fail to meet Purpose & Need	Community vision/ goals Economic development
What supporting data justifies that the solution is “unreasonable”?	Modal interrelationships Modal considerations
What aspect(s) of the Purpose & Need does this solution fail to meet?	Capacity Transportation demand
Why was this modal solution determined to be “unreasonable” based on Purpose & Need?	Security Local key priorities Documentation of adequate public involvement Safety System linkage Transportation system needs

Community/Cultural Resources	
What impacts to community resources make this solution “unreasonable”?	<ul style="list-style-type: none"> Established communities and neighborhoods Locally identified special areas (red flags) Section 4(f) properties Section 6(f) properties Public lands Transportation system needs Local long-range plans
Natural Environment	
What impacts to the natural environment make this solution “unreasonable”?	<ul style="list-style-type: none"> Rare natural features Watershed waters
What physical constraint makes this solution “unreasonable”?	<ul style="list-style-type: none"> Threatened and endangered species (includes critical habitat) Mitigation sites Superfund sites Mapping
Goals/Values	
What creates conflict and makes the transportation solution “unreasonable”?	<ul style="list-style-type: none"> Adopted plan Community involvement Community vision

Alternatives Recommended for Elimination from Further Study Report: a report similar to alternatives recommended report (again, not necessarily required by NEPA) that must provide detailed data to support elimination of alternatives from further study. Table 2 shows the data elements that can be used to support an unreasonable alternative finding.

What Decisions Help Make the Linkage?

The linkage of long-range plan screening and evaluation of both project concepts and overall plan scenarios to NEPA alternatives screening is one of the most important linkages of PEL. This linkage not only has the greatest potential for streamlining the NEPA process, it also shows the local community and stakeholders that the NEPA process

is acknowledging and, to the greatest extent possible, accepting the extensive work that was done during long-range planning.

Every NEPA process should accept the long-range plan locally preferred alternative as one of the NEPA alternatives for detailed study unless there is a fatal flaw that emerged since the plan was adopted. The locally preferred alternative is the alternative selected by local decision-makers as the preferred solution to the identified needs of a corridor. This does not mean that this alternative will survive NEPA analysis, but it should be given the full opportunity to be reviewed as a part of the process.

Unreasonable alternatives can also be identified during long-range planning and, if properly documented, can be eliminated from consideration during NEPA. Rationale for eliminating alternatives

may include failure to meet Purpose & Need, impacts to community and cultural resources, impacts to the natural environment, and conflicts with community goals and values. Before an alternative is judged unreasonable, a rationale needs to be presented to the public and agencies for their review and comments. Both individual project concepts and overall plan scenarios can be judged as unreasonable.

If sufficiently documented, unreasonable solutions eliminated in planning need to be presented as part of the scoping package, be briefly discussed in the environmental document and the long-range planning analysis, and be incorporated by reference in NEPA. The key to this linkage is the documentation that is provided to support the decision to eliminate an alternative.

Linking the Adopted Plan With Selected Alternatives

Another obvious linkage would be to tie the adopted transportation plan to the selection of alternatives under NEPA (see Exhibit K).

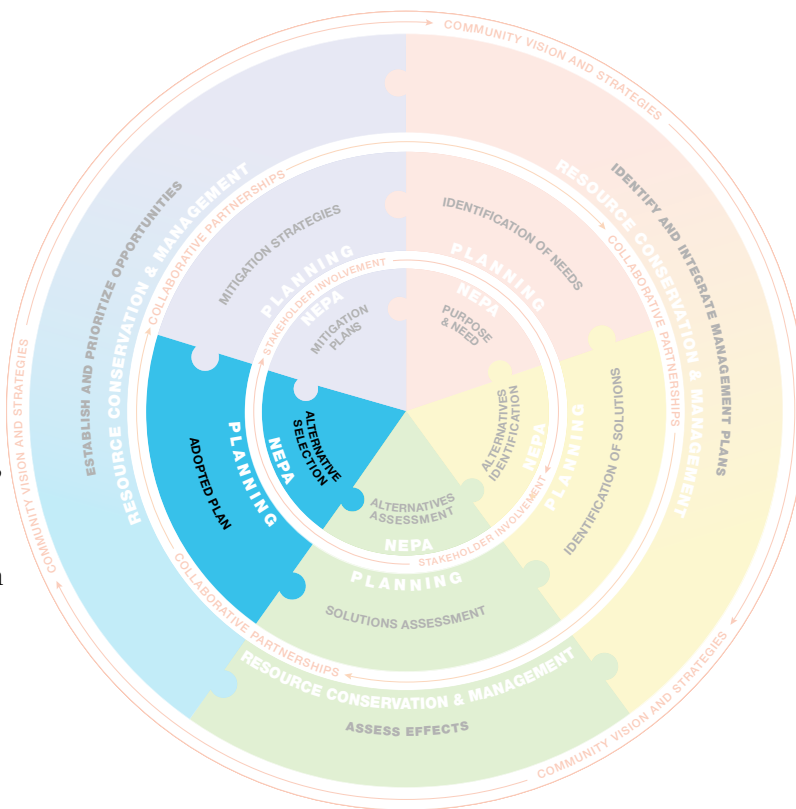
What Is the Linkage?

Comprehensive documentation of the process used and major decisions made during long-range transportation planning.

Why Make the Linkage?

By federal law, metropolitan planning organization boards are the ones to approve a fiscally constrained long-range plan. This plan reflects the community's consensus about the physical characteristics and service levels to be provided by the transportation system of the future. Beyond federal requirements, however, this long-range plan provides significant

Exhibit K



insight into the community's vision for the physical size, future land use, modes, and level of service for the future transportation system.

In air quality nonattainment and maintenance areas, it will also show the anticipated timing of major improvements recommended in the plan. The adopted local plan should be the starting point for anyone interested in linking planning to the environment at the project level (for transportation plans) or for other planning processes (open space, conservation, watershed, etc).

What to Consider?

Providing user friendly long-range planning documentation in sufficient detail that will allow planners and engineers to use long-range planning

data and analysis to incorporate locally preferred alternatives into the alternatives selected for detailed study during NEPA.

What Data Informs This Linkage?

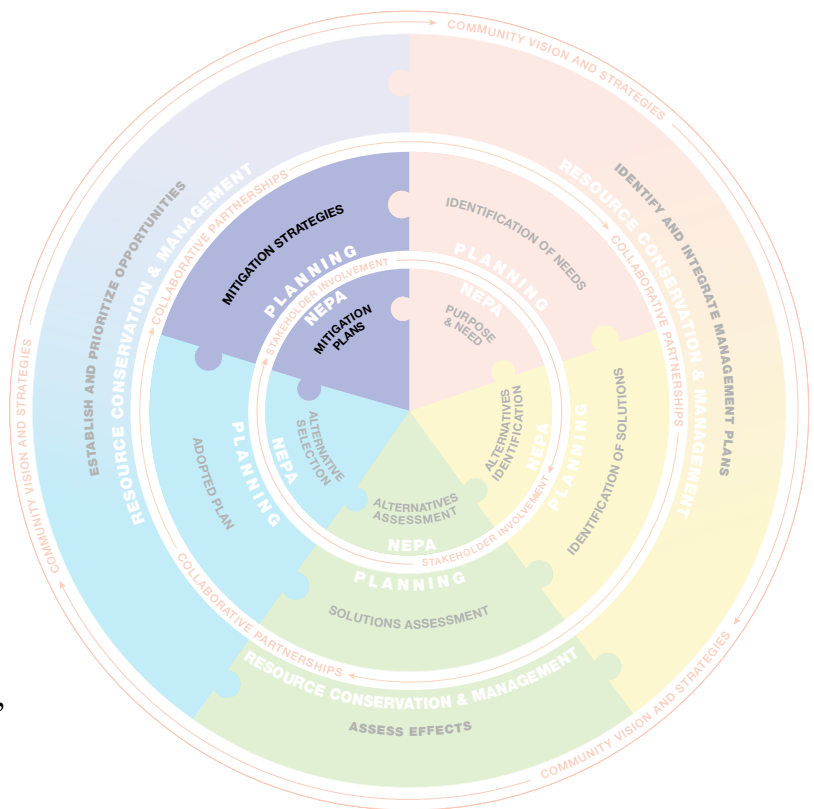
The adopted long-range plan is the culmination of the planning process. The plan documents the decisions by the policy makers on the locally preferred alternative for both the overall future transportation system and for individual projects, or services in the case of some modes. The data that informs these decisions has been created throughout the planning process. At this point, the primary purpose of the linkage is to document the relevant information in a form that makes it accessible to project planners. The locally preferred alternatives included in the adopted plan are based on significant technical analysis, stakeholder input, and public debate and should be respected as an alternative selected for detailed analysis during NEPA.

Analysis and Documentation

The key to successful linkage is the development of usable documentation. Documentation should be created at each step in the planning process at a level that is useful and transferable to project planners. This documentation can be included in technical appendices or summary working papers that can be provided electronically or in paper form to project planners.

However, the information provided in the adopted long-range plan should be sufficient for anyone, including the public, to understand both the endorsed alternatives and the rationale for their selection. This could include:

Exhibit L



- Maps clearly showing endorsed alternatives for new and improved roads, transit services, and other modes where applicable.
- Tables, charts, and/or narrative that show why the overall plan and major new projects or services were selected.
- Appendices or references to technical reports that provide more in-depth analysis and documentation for the decisions made.
- Summary of the stakeholder involvement process and comments throughout the process and a description of how the locally preferred plan responds to those comments.
- Identification of highest priority major improvements that are likely to be recommended or funded in the near term with references to

technical data that can be used to support the development of a problem statement.

What Decisions Help Make the Linkage?

The Policy Board adopts the long-range plan. This adoption allows this linkage to occur.

Linking Mitigation Strategies With Plans

A final linkage would be to link the potential mitigation strategies developed during planning with the mitigation plans developed during NEPA (see Exhibit L).

What Is the Linkage?

Where mitigation is required, state DOTs and resource agencies have been exploring ways they may bring the unique skills of each to bear to increase the viability of at-risk communities and ecosystems, by identifying mitigation needs and opportunities across many projects and much broader areas in planning.

Natural resource impacts and opportunities are examined in the planning stage, across multiple projects in a region or state, and integrating land use, transportation, and natural resource restoration/conservation planning directs priority investments. Decisions and analysis can occur during planning that can greatly facilitate federal Clean Water Act and Endangered Species Act compliance, among other natural resource laws and regulations.

Why Make the Linkage?

This linkage will provide:

- A more efficient and less risky project development process.

- Efficient and effective public expenditures on mitigation.
- Substantive contributions to species, watershed, and ecosystem health and recovery.
- Time savings made possible by establishing and prioritizing opportunities through integrated planning.
- Cost savings for mitigation acquired earlier in process. Opportunities for ecosystem-level conservation and/or mitigation that are available during planning may not be available or may be prohibitively expensive when a project is implemented.
- Greater certainty of permitting approvals during project development saving time and money.
- More cost-effective transportation solutions with significant and lasting environmental benefits.

What to Consider?

- Conflicting priorities and scales among agencies or field offices, or national, regional, and local concerns
- Inconsistent terminology and incompatible data and performance measures across agencies
- Conflicting geographic, ecological, and political boundaries
- Lack of plans (especially plans for natural resources) or plans with differing levels of detail
- Communication among stakeholders and the need for early and long-term involvement
- Funding procedures (short-term objectives often get funded before long-term objectives)
- Risk aversion and lack of trust among agencies
- Perception that regulations are inflexible

How to Do It?

A recent cooperative effort among federal resources agencies and the FHWA resulted in a watershed approach to mitigation called *Eco-Logical*. *Eco-Logical* encourages flexibility in regulatory processes. It lays out the conceptual groundwork for integrating plans across agency boundaries and endorses ecosystem-based planning and mitigation. An *Eco-Logical* approach relies on agencies to work together with the public to integrate their respective plans in determining environmental priority areas and targeting where mitigation investments may be able to produce the greatest good for multiple species and resources. This often involves looking at species and community goals across eco-regions, based on habitats.

Build and Strengthen Collaborative Partnerships: A Foundation for Local Action

Essential to the *Eco-Logical* approach is the development of close collaborative partnerships among diverse groups help to identify where interests and concerns overlap, and thus help to form the basis for an integrated planning process. The benefits of these partnerships can be both immediate and long-range-term. Any agency—not just an action agency—should be able to initiate or be willing to participate in this effort. This step may be considered in tandem with data acquisition.

- **Build relationships with federal, state, county, municipal, and tribal partners, the public and other stakeholders.** They can participate in long-range-term landscape conservation and management measures; they offer important services and knowledge; and may have significant project and mitigation implementation concerns that can be understood in planning. In addition to fostering transparent decision-making, their

involvement often leads to creative solutions not previously considered.

- **Formalize working partnerships**, for better communication of roles and responsibilities and help ensure continuity of the effort in spite of inevitable staff turnover.
- **Create a collaborative culture** at the field-office level so agencies can develop ecosystem approaches at both the planning and project development levels, and ultimately integrate their planning efforts at the regional and landscape levels (e.g., use interagency liaison officers).

What Data Informs This Linkage?

Data for implementing *Eco-Logical* is drawn from multiple agency sources representing transportation, community, and environmental resources information. To the greatest extent possible, this information should be gathered in GIS data layer formats. Community and transportation data needed are the same as the information used to implement the long-range planning process. All available and acceptable GIS level natural resource data should be used to help implement an *Eco-Logical* based process. Generally available and excellent sources for resource data are:

- Ecoregional conservation plans have been completed for the contiguous U.S.; science-based research and conservation organizations such as NatureServe and The Nature Conservancy focused on and completed significant planning for the viability and recovery of imperiled species, with input from resource/regulatory agencies, when the agencies could not do this work themselves. Now the data and planning work is being utilized by state DOTs as well as resource agencies.

- State wildlife action plans are available in every state. Transportation agencies are required to consult these when developing transportation plans and identifying mitigation needs and strategies.
- Resource Agency Management Plans are a foundation for developing a regional ecosystem framework. Some types of plans include:
 - Watershed plans
 - Recovery plans
 - Resource management plans
 - Forest management plans
 - U.S. Army Corps of Engineers' Special Area Management Plans
 - Plans developed by non-governmental organizations (NGOs) working with agency scientists, such as the Bird Conservation Plans of Partners In Flight, ecoregional plans of The Nature Conservancy, Wildlife Action Plan, or statewide Comprehensive Wildlife Conservation Strategy
 - For coastal states there are plans from state coastal management programs, state coastal non-point (not from a single, well-defined site) pollution programs, National Marine Sanctuaries (NOAA Fisheries Service), National Estuarine Research Reserves (NOAA Fisheries Service and States), and National Estuary Programs (EPA)

What Decisions Help Make the Linkage?

During the planning process, existing resource information as well as recovery or management plans should be used to help screen all planning scenarios and project concepts by overlaying resource information with community and transportation plans and proposals. This overlaying provides partners with an understanding of the locations and potential impacts of proposed infrastructure actions. With this understanding, they can more accurately identify the areas most in need of protection, and better predict and assess cumulative resource impacts. This can also streamline infrastructure development by identifying ecologically significant areas, potentially impacted resources, regions to avoid, and mitigation opportunities before new projects are initiated.

This process will help ensure that the final plan and the individual project concepts incorporate environmental goals to the greatest extent possible. In the end, however, it may not be possible to avoid all environmental impacts associated with the final approved plan.

