

# Tools, Resources, and Notable Practices to apply the National PEL Framework



U.S. Department of Transportation

**Federal Highway Administration**

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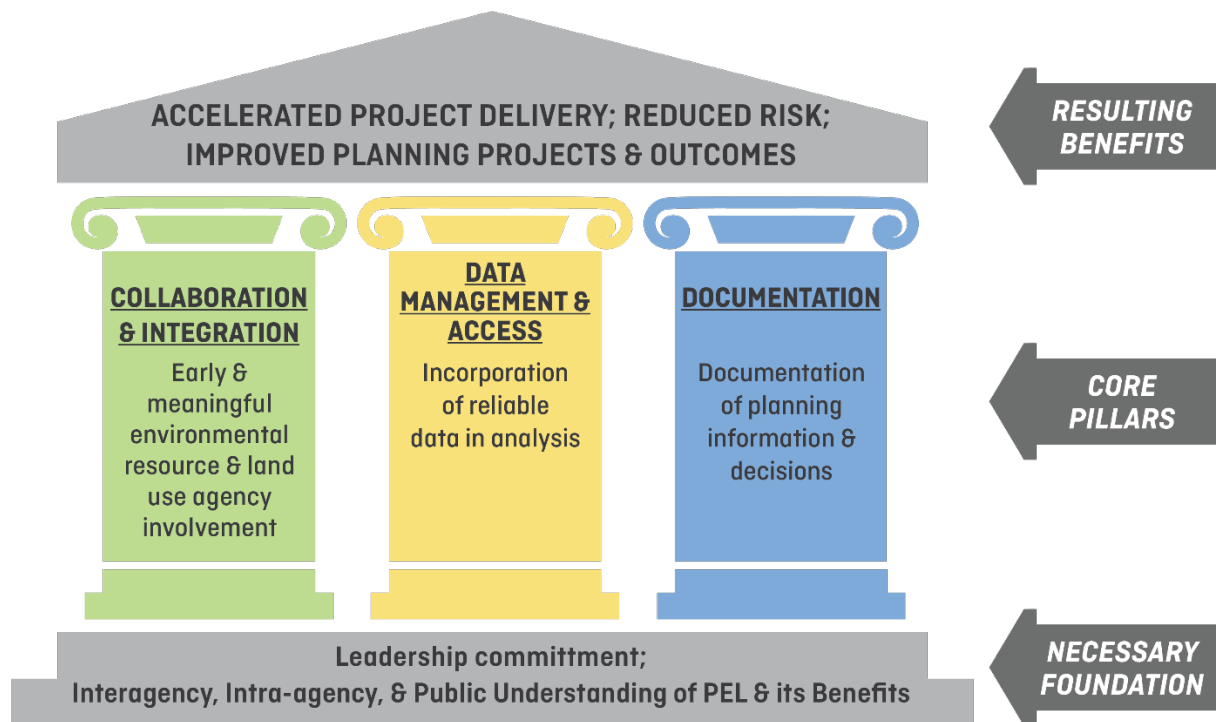
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## Web Based Content Vision

*This information is envisioned as web-based content where the user clicks on each of the below components of the framework and applications of that element and notable practices, resources and tools associated with it will open and be linked as well.*

The following section outlines general applications that can be used within each component of the National PEL Framework. These general practices are supported with tools, resources and notable practices that can provide practical ideas and inspiration to build for the integration of PEL.



## Tools to Build a PEL foundation - Leadership Commitment; Interagency, Intra-agency and Public Understanding of PEL and its Benefits

### Leadership Commitment

Leaders can signal their commitment and support to PEL, thus their intention to integrate planning products into future project development steps, through partnership agreements. These agreements signal the importance and priority of PEL to those working within the various agencies. An agreement can be general in nature outlining the purpose of the agreement and anticipated benefits which the signatories agree to and sign.

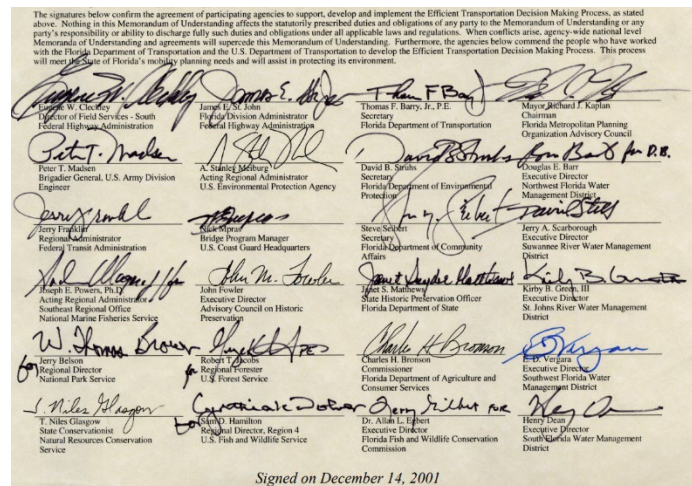
## Notable Practices

### Colorado Planning and Environmental Linkages Partnering Agreement Detail of purpose and benefits

In 2009, members of the Transportation Environmental Resource Council (TERC), drafted and signed a Partnering Agreement. The document is only five pages in length and outlines the purpose and benefits of the agreement and signed by directors and administrators representing all 15 organizations.



### Florida ETDM Memorandum of Understanding and Agency Operating Agreements



Florida's DOT first gained the commitment of various agencies to support Efficient Transportation Decision Making in February 2000. This memorandum of understanding is still in effect today and confirms the support of all agencies in the ETDM Process. Florida's [ETDM Document Library](#) includes agency operating agreements since the early 2000's until present. These can provide examples of types of agencies that may enter these agreements and language to incorporate in their creation.

### Communication of a PEL Approach and its Associated Benefits

For a PEL approach to advance and lead to successful engagement in planning, agency leadership must first understand and be motivated towards achieving the associated benefits. A successful application of PEL will mean the public has more opportunity to provide input and engage in the planning process. This is also true for other environmental resource and land use agencies who, as a result of increased outreach, are more engaged in the planning process and therefore more likely to support planning

outcomes and specific projects when they are carried forward to project development. An explanation of the benefits for a partner agency should be tailored to what is important to their agency and the advancement of relevant agency goals. Videos, webinars, infographics, and informational documents are effective tools to communicate the PEL approach and its associated benefits.

## Notable Practices

### [Colorado What is a Planning and Environmental Linkages Study Video](#)

[Detailed case study here](#)

Colorado DOT created a short three-minute video which explains the vision and reasoning for a PEL study, an explanation of a project's purpose and needs, development and evaluation of alternatives, vision and implementation, and how these different elements feed into NEPA. The language and visual elements in the video communicate in a manner more engaging and succinct than a written document. The success of using this video, or a video like it, is increased or better quality engagement.

### [FHWA PEL Today Webinar Series](#)

FHWA recorded a series of three webinars from PEL experts and practitioners in June 2020 covering an overview of PEL authorities and available resources from FHWA, information about state-level implementation of PEL, and the early involvement of resource agencies when using PEL approaches. These webinars were primarily targeted to transportation professionals, in planning and environmental disciplines, to explain PEL and its potential utility. The success of this resource is transportation professionals applying PEL in ways that increasingly engage the public and other agencies in quality engagement.

### [Florida's Efficient Transportation Decision Making \(ETDM\) Process](#)

Florida DOT created a six page overview document of ETDM which is stored in the Environmental Screening Tool [Document Library](#) along with many other useful materials relevant to the ETDM process. The overview communicates the key features of ETDM, explains the projects that qualify for such a process and steps involved in ETDM. It includes an overview of the Environmental Screening Tool, outlines dispute resolution processes, and links sites with more information about ETDM. Resources like these can be used to explain PEL and its benefits to agency leadership, and the success of such outreach would be leaders to sign on and commit to applying PEL.

### [North Carolina DOT Comprehensive Transportation Planning Process Diagram](#)

To help communicate the steps involved in the transportation planning process, both internally and externally, North Carolina DOT created a Comprehensive Transportation Planning Process diagram which details 50 elements involved in transportation planning. Communicating these steps can help environmental or land use professionals understand the transportation process. Successful engagement using a resource like this would result in better quality engagement due to increased understanding of the transportation process and aligned goals.

### [Colorado DOT Planning and Environmental Linkages Handbook](#)

Comprehensive handbook documents can be useful for states with established PEL practices. Colorado DOT updated their 2016 PEL Handbook in 2022 which is linked on their [PEL Programs webpage](#). The

document provides an introduction of the PEL process in Colorado, outlines process guidance and resources, gives an overview of the long range transportation planning process with PEL, details steps involved in conducting a PEL study including the documentation required, and outlines how this material can be transitioned to the NEPA process for federally funded projects. Other best practices in Colorado are also detailed.

**[Oregon DOT Planning and Environmental Linkages Guidance](#)**

Oregon’s DOT created a guidance document including best practices related to PEL within the state. The guidance is intended to provide consistency within statewide practices and provide a baseline understanding of PEL and its benefits.

**[Project Cost-Benefit Comparison, ETDM Progress Report #5](#)**

One important benefit of PEL includes the potential cost savings that can be realized from involving resource agencies, stakeholder and the public in the process sooner thereby reducing risks, enhancing the coordination and project planning, and ultimately informing the NEPA processes. An example quantification of this cost benefit is provided in one of Florida DOT’s ETDM Progress Reports. The Figure below shows this comparison which is provided in context on Page 12 of [Progress Report #5](#) available within the [ETDM Document Library](#).

Table 3-1: ETDM Project Cost-Benefit Comparison (Oct 2004 – Oct 2011)

District	Cumulative Comparison Projects Completing a Screening between Oct 2004 - Oct 2011			
	Projected Savings		Projected Increases	
	Dollars	# of Months	Dollars	# of Months
D1	\$17,980,000	528	\$1,376,000	269
D2	\$50,000	1	\$0	0
D3	\$2,735,000	72	\$2,631,000	90
D4	\$14,622,000	336	\$0	0
D5	\$11,844,000	143	\$0	0
D6	\$14,030,000	230	\$780,000	153
D7	\$768,520	10	\$91,000	3
Turnpike	\$0	0	\$0	0
<b>Total</b>	<b>\$62,029,520</b>	<b>1320</b>	<b>\$4,878,000</b>	<b>515</b>
<b>Total Projected Screening Savings (=Projected Savings-Projected Increases)</b>				<b>\$57,151,520</b>
<b>Cumulative Program Administration(2000-2011)</b>				<b>\$31,064,176</b>
<b>Projected Net Savings (=Total Projected Screening Savings-Cumulative Program Administration)</b>				<b>\$26,087,344</b>
<b>Projected Savings/Avoidance in Man Months</b>				<b>805</b>

**[PEL Benefits: Measuring the Benefits of Planning and Environmental Linkages](#)**

FHWA commissioned this report which explores and documents the potential benefits of PEL through five case study examples from across the country. The report found that specific benefits vary for different applications of PEL and in different contexts, but several commonalities do exist. These benefits include improvements to the environmental review process, improved documentation, cost and time savings, flexible evaluation of alternatives, PEL strategies applied at the local level, holistic and flexible planning approaches, enhanced community involvement, enhanced grant capacity, ability to leverage other opportunities, and improved relationships and coordination. This report can be used to communicate the benefits of PEL with real case study examples, and give leadership and resource agencies ideas for metrics of success.

## Tools for Collaboration and Integration

Collaboration is a pillar of a PEL approach because it results in productive integration of differing perspectives of both the planning team and stakeholders. Strong collaboration among transportation and resource/regulatory agencies is important whether the objective is to prepare planning products to inform NEPA or to bring environmental needs more meaningfully into early transportation systems planning.

### Establish Regular Check Points

Regular check points among transportation agencies and resource/regulatory agencies are a simple yet effective way to foster better collaboration and build trust. These meetings can have a flexible agenda that allows the free flow of information among all the agencies. A key early step is to establish a process and regular meeting time for check-ins between transportation planners and resource/regulatory agency staff.

### Integrated Planning Advisory Committee

MPOs and state DOTs have organized committee structures for more formal collaboration with resource/regulatory agencies to ensure their participation in the planning and development of transportation projects. An “Integrated Planning Advisory Committee” is an interagency group that is involved in early systems-level transportation planning to provide input to the process, contribute reliable and up-to-date data sources, and to help shape the vision and transportation plan. This collaboration continues through project development and NEPA studies and ensures that early collaboration to develop coordinated transportation, environmental, and land management systems provides the foundation for project level reviews in NEPA.

### Notable Practices

#### [Interagency Coordination Protocol for North Carolina’s Transportation Process](#)

North Carolina DOT established a coordination protocol with the Institute for Transportation Research and Education to support long range transportation planning in collaboration with important process partners. These partners include MPOs, Rural Planning Organizations, FHWA, FTA, environmental resource agencies, local governments, land use agencies, and other entities participating in long range transportation plan development. The protocol includes background information on how it was developed which includes a variety of different outreach and engagement efforts. The protocol describes how to initiate contact, coordinate between agencies on data and goals, validate priorities, coordinate on projects, and submit final plans. It also includes a survey that is sent to resource agencies at the completion of transportation planning processes to provide feedback on the quality of coordination. The protocol also includes example email templates for communication at different stages in the transportation planning process, and the Annual Coordination Process Survey to gather feedback on coordination processes pertaining to different resources.



## Appendix 6: Workshop Invitation Email

Approved: 2/5/18  
Revised: \_\_\_\_\_  
Version 1

### Appendix 11: Annual Coordination Process Survey

Annually a survey is conducted to gather feedback on the coordination process (see the Procedure to Update the Protocol), in addition to surveys distributed at the end of each transportation plan update. Tools that may be used include Qualtrics, Google Forms, Survey Gizmo, Survey Monkey, etc. Skip logic should be utilized to tailor the survey questions based on respondents' responses on early questions. For example, if a respondent indicates that they do not manage resources that are viewable by map, they will be asked no questions about GIS data layers.

1. (ANSWER REQUIRED) Name: [Text entry]
2. (ANSWER REQUIRED) Please select your agency/division from the following list:
  - Audubon NC
  - NC Center for Geographic Information and Analysis
  - NC Department of Commerce
  - NC Department of Cultural Resources (NCDCCR)
  - NC Division of Energy, Mineral, and Land Resources (NCDEMLR)
  - NC Division of Water Resources (NCDWR - NCDENR)
  - NC Division of Coastal Management (NCDWM - NCDENR)
  - NC Division of Mitigation Services (NCDMS - NCDENR)
  - NC Natural Heritage Program (NCNHP - NCDENR)
  - NC Division of Marine Fisheries (NCDMF - NCDENR)
  - NC Division of Waste Management (NCDWM - NCDENR)
  - NC Forest Service (NCFS - NCDA&CS)
  - NC Wildlife Resources Commission (NCWRC)
  - North Carolina Division of Public Health (NCDPH)
  - Regional Land Use Advisory Commission (RLUAC)
  - US Army Corps of Engineers (USACE)
  - US Department of Agriculture (USDA)
  - US Fish and Wildlife Service (USFWS)
  - US EPA
  - Other: [Text entry]

TO: [Email distribution list]  
FROM: [Name]  
DATE: [Date]  
SUBJECT: [Hilltown CTP] Invitation to workshop to be held [insert date]

All,

Previously, you indicated an interest in being included on the email distribution list for the Hilltown CTP. To better understand the natural resources and information contained in plans concerning the CTP study area, we would like to invite you to a one-day workshop to be held [date, time, and location].

## [North Carolina Interagency Leadership Team \(NCILT\)](#)

North Carolina created an Interagency Leadership Team which includes representatives from agencies that are integrally involved in the planning, development, and implementation of North Carolina's transportation system. These groups include; NC Department of Transportation, NC Department of the Environment and Natural Resources, NC Department of Agriculture and Consumer Services, NC Department of Commerce, NC Department of Cultural Resources, NC Wildlife Resources Commission, United States Army Corps of Engineers, Federal Highway Administration, United States Fish and Wildlife Service, Environmental Protection Agency, National Marine Fisheries Service The NC Interagency Leadership Team group came together in 2004 with the vision of developing transportation projects using a collaborative, interdisciplinary approach. This approach also aims to preserve the scenic, historic, and natural environment while efficiently meeting the mobility, economic and safety needs of citizens. The NCILT originally identified two major goals of developing a shared and comprehensive Geographic Information System (GIS), and to partner with local governments and stakeholders to integrate local land use, environmental, and economic planning initiatives in long range transportation planning.

## **Arizona DOT coordination calls**

Arizona DOT found success scheduling a monthly coordination call between the agency and several resource/regulatory agency staff. They have also applied this practice to active projects. ADOT found it important to maintain the call and check in, even if there are few items to discuss.

## [Central Yavapai MPO's Ecosystem Connectivity and Advisory Committee](#)

The Central Yavapai MPO's Ecosystem Connectivity and Advisory Committee is comprised of seven voting members from ADOT NW District Environmental, AZ Game & Fish, Yavapai County Land Use Planning Staff, Prescott National Forest, and three private citizens who must reside within the CYMPO

planning boundary. The mission of the EMAC is to study and advocate for the preservation of interconnected ecosystems in the CYMPO Region that will integrate land use and mitigation for natural resource protection, and wildlife habitats into the regional transportation planning and design process. The EMAC reports to the MPO's Technical Advisory Committee (TAC) on a monthly basis and provides regular reports on a quarterly, bi-annual, or as needed basis to the MPO Executive Board.

[Florida Environmental Technical Advisory Team \(ETAT\)](#)

In support of its ETDM Process, FDOT established an ETAT that comprises representatives from resource/regulatory agencies (participating agencies) and Native American Tribes. The ETAT representatives are appointed by their respective agency or tribal government and are responsible for coordinating reviews and communicating to support the planning and development of transportation projects. The ETAT representatives review proposed transportation projects to identify potential issues; provide guidance for addressing these issues; assist in focusing future studies; and contribute information about the natural, physical, cultural, and community resources. The ETAT representatives maintain team communications on behalf of their organization and serve as points of contact from planning through future project development phases. The ETAT representatives have authority and responsibility to coordinate internally and provide comments on behalf of their organization.

<b>ETAT Agency</b>
FL Department of Agriculture and Consumer Services
FL Department of Economic Opportunity
FL Department of Environmental Protection
FL Department of State
FL Department of Transportation
FL Fish and Wildlife Conservation Commission
Northwest Florida Water Management District
Saint Johns River Water Management District
South Florida Water Management District
Southwest Florida Water Management District
Suwannee River Water Management District
Federal Rail Administration
Federal Transit Administration
National Marine Fisheries Service
National Park Service
Natural Resources Conservation Service
US Army Corps of Engineers
US Coast Guard
US Environmental Protection Agency
US Fish and Wildlife Service
US Forest Service
Miccosukee Tribe of Indians of Florida
Seminole Tribe of Florida
Military Bases (Eglin, Whiting, etc.)

[Florida ETDM Document Library Resources](#)

Florida's ETDM Document Library provides links to documents including memos and agreements stored in the ETDM database. It is possible to search for documents by category or keyword and clicking on the name of the document to view it. To find specific documents or documents related to a specific topic, type in the document or topic name (or a portion of the name) in the Keywords field, then click "Search." A list of all documents for a specific category is displayed by selecting the category from the Category pull-down menu, then clicking "Search." After reviewing the selected document, click the "Back" button to return to the list of documents.

[Risk Assessment for Future Projects](#)

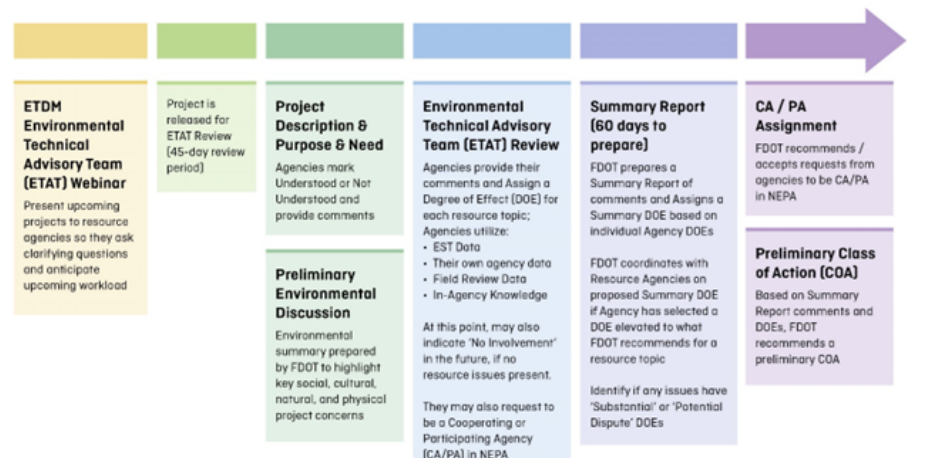
Early collaboration with resource/regulatory agencies in providing and evaluating data sources helps them shape and understand the vision that a transportation project supports. It also helps transportation planners to conduct meaningful risk assessments during early systems planning, which can help planners and environmental staff avoid and minimize impacts while projects are still being conceptualized. Such assessments should identify potential “red flags” that could significantly delay project development and the NEPA process. Conducted in early systems or corridor planning, these assessments can help planners either amend the project concept and/or alternatives, to avoid or minimize potential impacts or prioritize project.

## Notable Practices

### Florida ETDM risk assessment

Florida’s ETDM process provides an example of conducting a risk assessment during transportation planning. FDOT engages with resource/regulatory agencies to assess risk during a project screening by the agencies. During the review period, federal and state resource/regulatory agencies that comprise the Environmental Technical Advisory Team (ETAT) review the project purpose and need statement, preliminary environmental discussion prepared by FDOT as well as utilize GIS data from the EST and their own agency data to assign a “Degree of Effect” (DOEs) that can range from “None” to “Significant”. An agency can also request further collaboration through an “Issue Resolution Process”. In this case, the potential issue must be resolved before the project proceeds to final design.

**RESOURCE AGENCY ENGAGEMENT THROUGHOUT ETDM (PRE-NEPA) PROCESS: CORRIDOR LEVEL ENGAGEMENT**



*Exemplary Practice: Corridor Level Resource Agency Engagement within Florida’s ETDM Process*

### California’s Strategic Integrated Framework for Action

A strategic integrated framework for action is needed to ensure that the vision of climate-safe infrastructure for all gets realized. It includes data and analytics which inform infrastructure planning and design to generate a prioritized list of projects that can be implemented with the help of appropriate governance structures, financing tools and implementation aids (Source: Adapted from Cleveland 2018, used with permission)

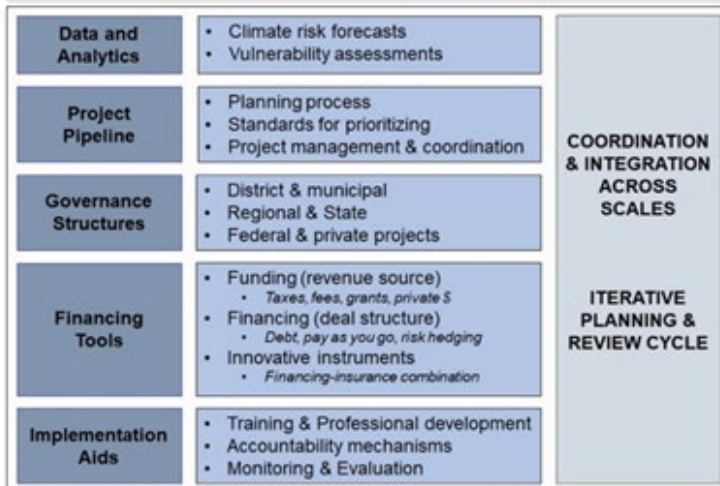


Figure ES.7: A strategic, integrated framework for action is needed to ensure that the vision of climate-safe infrastructure for all gets realized. It includes data and analytics which inform infrastructure planning and design to generate a prioritized list of projects that can be implemented with the help of appropriate governance structures, financing tools and implementation aids. (Source: Adapted from Cleveland 2018, used with permission)

**Exemplary Practice:** California's Strategic, Integrated Framework for Action

## Funding for Resource/Regulatory Agency Involvement in Planning

The proposed National PEL Framework calls for more involvement of resource/regulatory agency staff in early systems planning, with the goal of better integrating goals for environmental resource preservation with transportation decision making. This shift of resources to earlier planning phases may result in transportation projects that avoid impacts to environmental and cultural resources, potentially resulting in more focused environmental reviews during project development. Committed funding for relevant and dedicated resource/regulatory agency participation in the development of integrated systems plans is needed. Several state DOTs across the country have helped resource/regulatory agencies participate in project development earlier in the planning process by paying for a staff position dedicated to transportation project review, which is allowed under federal law (23 U.S.C 139).

## Notable Practices

### FDOT Funded Positions Reference Handbook

To assist resource/regulatory agency participation in its Efficient Transportation Decision Making (ETDM) Process, FDOT developed funding agreements with 17 federal and state resource/regulatory agencies that provide funding for their active participation in the process. The funding agreements specify services and work products expected in exchange for authorized funding levels. The agreements consist of renewable five-year terms. This has been recognized as a best practice for FDOT and resource/regulatory agency partnerships in the planning and project development process. The Funded Positions Reference Handbook provides an overview of funded position requirements, as established through the ETDM process funding agreements, and step-by-step guidance for agencies to develop, process, review, and submit invoices to FDOT for their work and active participation in the ETDM process.



### FHWA Transportation Liaison Community of Practice (CoP) Website and Linked Resources

FHWA Transportation Liaison Community of Practice (CoP) provides resources, information, and best practices for transportation liaisons and liaison managers, State departments of transportation, and public entities receiving funding from the U.S. Department of Transportation (USDOT) under title 23 or chapter 53 of title 49, such as resource and regulatory agency staff. FHWA established the [Transportation Liaison COP website](#) to foster a greater understanding of the roles and benefits of transportation liaisons, as well as facilitate access to resources and opportunities for innovation. One of the resources linked on this site is a report on [Establishing a Transportation Liaison Program: A How To-Guide for Agencies interested in Getting Started](#). This resource covers seven different stages of establishing a transportation liaison program including assessing the need, leadership and funding support, designing a program, formalizing agreements, implementing and managing a program, evaluating outcomes, and revising or renewing agreements.



A community of practice (COP) for transportation liaisons and liaison managers that promotes best practices and provides insight into emerging questions and issues

## Tools for Data Management and Access

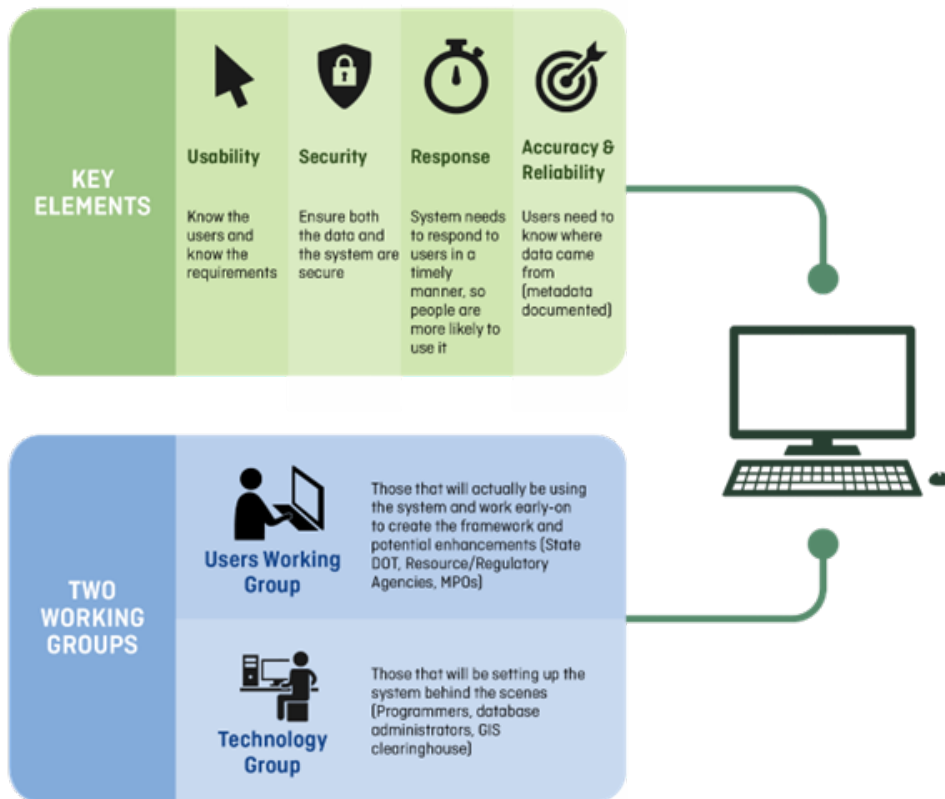
The second pillar of the National PEL Framework has data management access as its focus. This focus includes consideration of data organization, maintenance, and analysis tools. These tools identify opportunities and approaches for storing, organizing, and providing access to reliable planning and environmental data. Resource agencies often manage detailed information in the form of GIS data layers or online tools that can be made available to planners in the development of transportation plans.

To effectively use and interpret this data, collaboration with subject matter experts is necessary to avoid misinterpretation and to understand the priority of resources for avoidance.

### Creating a State GIS Databases to Support PEL

A working group consisting of both users and technology experts is an effective way to organize a data clearinghouse and management structure that fulfills the needs of end users. **Figure 1** shows the key considerations and elements that are pertinent to a successful data organization and management structure and the efficiency of using and viewing the data from the systems planning level to NEPA.

Figure 1. Considerations for Creating a Statewide GIS Database to Support PEL



### Notable Practices

#### University of Florida GeoPlan Center Digital Library

In 1998 the University of Florida GeoPlan Center established a free, web-based digital library of approximately 500 spatial data layers pertaining to Florida. This is known as the Florida Geographic Data Library (FGDL). The FGDL serves as the data clearinghouse for transportation project evaluations supporting Florida’s ETDM Process. Data is maintained by the GeoPlan Center, who ensures consistent formatting and access to reliable data. Operating Agreements with Federal and state resource agencies stipulate the reporting and data updating requirements.



## Data Organization and Accessibility

One of the initial considerations in establishing a data clearinghouse is the location and infrastructure requirements for the data repository. It is often best to build upon established data repositories that state or regional agencies may have in place for various planning and research initiatives. Universities and colleges, with GIS staff, can also be a great resource to serve as a data clearinghouse.

Data accessibility is a key consideration. Different data access privileges can be established for different user groups. Data access privileges can range from those serving in database management roles with authority to update and manage data to access privileges that only allow for download and use of data sets. The different access privileges ideally are determined based on the needs and roles of individuals and agencies using the data. Establishing these privileges can help nurture trust among transportation and resource/regulatory agencies, which is essential for obtaining consent from agencies to share data.

## Notable Practices

### [Denver Regional Council of Governments \(DRCOG\) Data Catalog](#)

The Regional Data Catalog is a repository of open data managed by DRCOG to support communities in making informed, data-driven decisions in areas including mobility, land use, and changing demographics. The data is regional in scale and is developed and compiled from local governments, data companies, land use and travel models, and data acquisition projects.

## Data Analysis and Coordination

The Florida ETDM approach to PEL is strongly supported by a technology interface that supports project evaluations, agency engagement, and documentation. This level of data management and analysis is not required for all PEL applications, but a commitment to data management and analytical methods is essential.

## Data Management

States looking to establish or refine their data repository will ideally first inventory what data sets they have available and what data are desired or needed to support systems- and corridor-level evaluations. Additionally, it is important to understand how these data sets can be accessed. When establishing a data repository there are several items to consider including data currency and reliability and consistent data formats and mapping standards. To ensure that current and reliable data are accessible, requirements for collecting, maintaining, and updating data must be specified. Memorandums of Understanding (MOU) / Agency Operating Agreements (AOA) between the data clearinghouse entity and the agencies who maintain their own datasets will stipulate the frequency of data updates, metadata requirements, and the format of data. This is a proven method for ensuring access to current, reliable, and usable data. **Figure 2** shows key considerations for a coordinated data management framework.

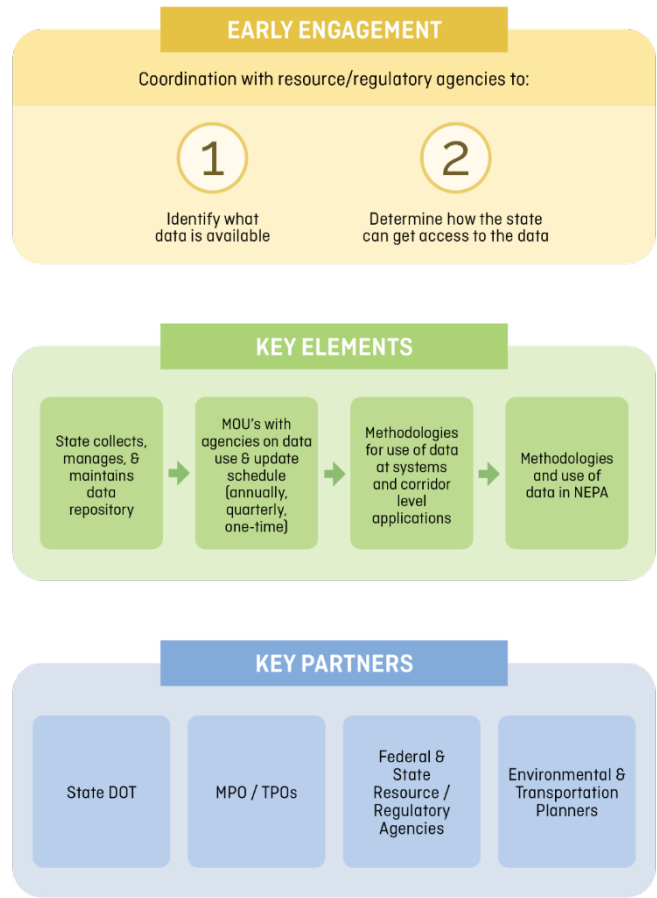
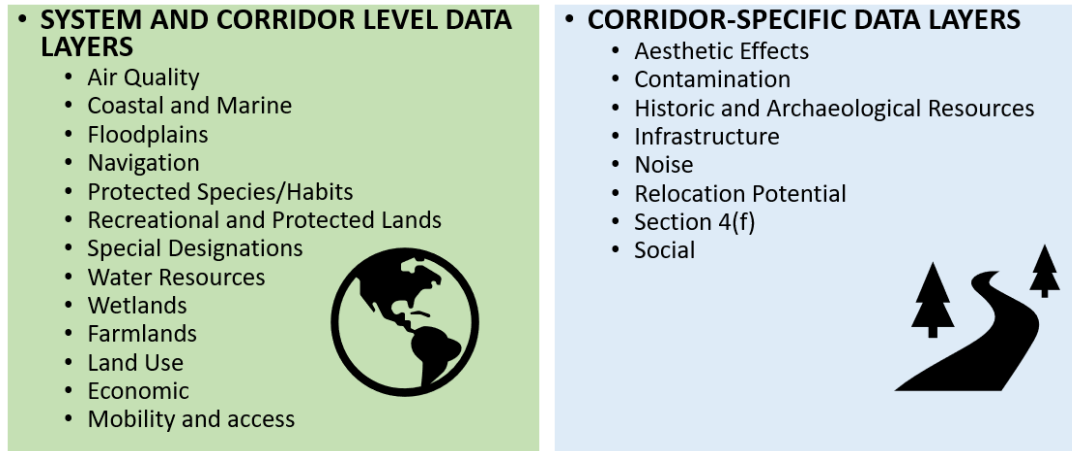


Figure 2. Data Management Considerations



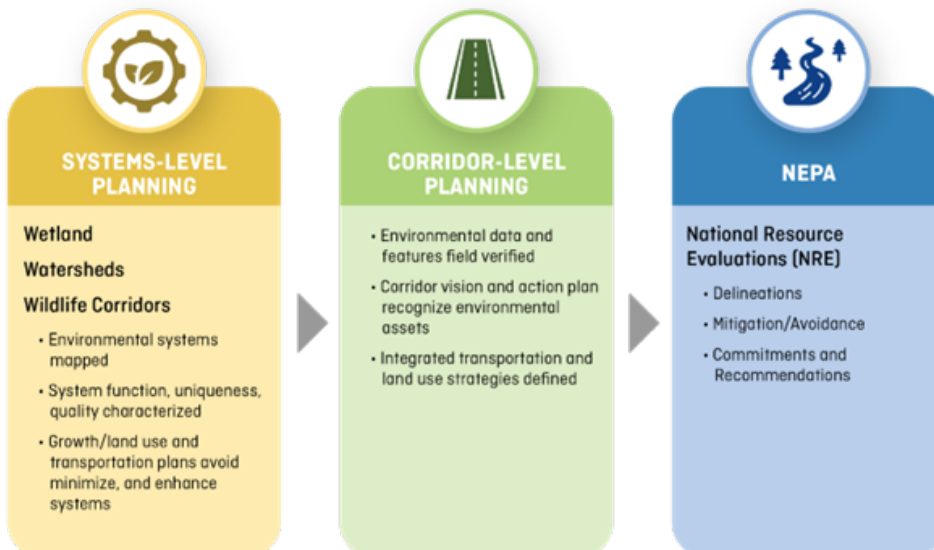
**Figure 3** provides examples of data layers to support systems and corridor level evaluations. The systems-level data sets are higher level, with more location specific data sets coming into play as the area of focus becomes more refined.

*Figure 3. Examples of Data Layers to Support Systems- and Corridor-Level Analyses*



**Figure 4** provides an example of how wetlands, watersheds, and wildlife corridors data can be used and applied from systems-level planning all the way through to NEPA. Initially, at the systems-level the aim is to avoid, minimize, and/or enhance the overall transportation and environmental systems. At the corridor-level, the aim is to ground-truth data analyzed and integrate the goals, if available, of transportation and land use plans available for the project area. At NEPA, the aim is to define the mitigation/avoidance options as well as define commitments and recommendations.

*Figure 4. Example of Data Use and Applicability*



## Notable Practices

### [Florida ETDM Manual: Data management](#)

Within Florida's ETDM Manual, there is a chapter dedicated to data management procedures and practices. These procedures and practices are used to provide consistent and high-quality information for information supporting the ETDM process through the Environmental Screening Tool. They cover data collection, preparation and maintenance responsibilities and techniques. Examples of Agency Operating Agreements (AOAs), and further information about the Screening Tool from FDOT's ETDM Process can be found at through the [Office of Environmental Management's Environmental Screening Tool](#).

### Regional Ecosystem Framework

A regional ecosystem framework (REF) is a key tool for supporting the integration of transportation planning with resource/regulatory agency goals, policies, and plans. FHWA's Eco-Logical describes a REF as an "overlay" of maps of agencies' individual plans, accompanied by descriptions of conservation goals in the defined region(s). These frameworks can afford agencies a joint understanding of the locations and potential impacts of proposed infrastructure actions.

With this understanding, they can more accurately identify the areas in most need of protection, and better predict and assess cumulative resource impacts. A REF can also streamline infrastructure development by identifying ecologically significant areas, potentially impacted resources, regions to avoid, and mitigation opportunities before new projects are initiated

A REF can be an especially useful tool for linking transportation and environmental considerations in systems planning. Transportation planners may work alongside resource/regulatory agency staff to develop a REF to help guide and evaluate the identification of various transportation solutions. The result can be a set of solutions that are more respectful of the environmental and community context and goals.

## Notable Practices

### [Bay Area Greenprint](#)

The Bay Area Greenprint layers several key resource data sets, along with information about their respective value, at the regional scale. This conservation data is accessible and provides a framework for interpretation for planners and resource agencies to facilitate the incorporation of natural and agricultural values information early into land use and transportation planning.

### [FHWA Eco-Logical Approach](#)

Within FHWA's Environmental Review Tool-Kit, the Eco-Logical approach explains methods to address natural resource identification, avoidance, minimization and mitigation within transportation planning. The site includes links to nine distinct steps within the approach as well as case studies and presentations from agencies who have successfully used the approach.

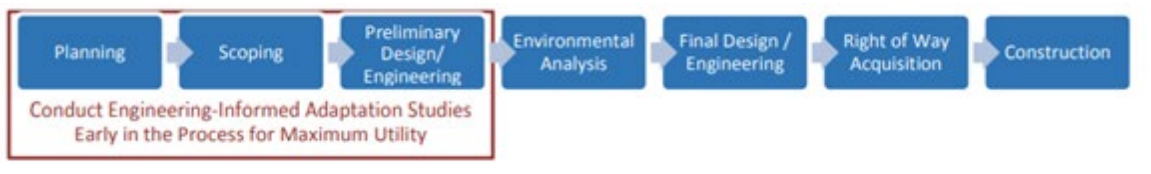
## Climate Change & Resiliency Planning Resources

The following resources are a few among the many that address the integration of resilience into infrastructure planning and design processes. They provide useful suggestions for ways to holistically build resilience considerations transportation planning.

The National Oceanic and Atmospheric Administration (NOAA) published [What Will Adaptation Cost? An Economic Framework for Coastal Community Infrastructure](#) in 2013. This resource introduces a four-step framework for evaluating the costs and benefits of adaptation, helping communities make more informed decisions about investing in resilient infrastructure. The steps are 1) understand your baseline risk 2) assess what you can do differently 3) calculate costs and benefits and 4) deciding.

[Synthesis of Approaches for Addressing Resilience in Project Development](#) was published in 2017, part of FHWA's [Transportation Engineering Approaches to Climate Resilience \(TEACR\) Study](#). Like NOAA's publication, this report introduces a framework for "identifying vulnerabilities at the project-level and creating engineering solutions to enhance resilience" but moves beyond just pure economic considerations for evaluating costs and benefits.<sup>8</sup> This resource also reminds readers that it is most impactful to integrate resilience considerations during a project's earliest phases including planning, scoping, and preliminary design and engineering because these phases set the stage for the project's final design.

*Figure 5. Elements of an Engineering Informed Adaptation Study (FHWA, 2017)*



*From Synthesis of Approaches for Addressing Resilience in Project Development (FHWA, 2017)*



**Figure 5** shows the key elements of engineering-informed adaptation studies. Several elements are supportive of PEL objectives, such as understanding site context and future climate; testing against future climate scenario(s); and developing, evaluating, and selecting adaptation measures.

The California Natural Resources Agency in 2018 published [Paying it Forward: The Path Toward Climate-Safe Infrastructure in California](#). This report introduces steps for flexible infrastructure adaptation pathways and a framework for implementing climate-safe infrastructure. Key elements of this framework – such as climate risk forecasts, vulnerability assessments, and standards for prioritizing – rely on the type of inter-agency coordination in early transportation systems planning that is envisioned in Collaboration & Inclusion pillar of the National PEL Framework.

## Regional Growth Framework

Like a Regional Ecosystem Framework, this mapping analysis aims to synthesize the growth areas and plans of various jurisdictions within a region. Combined with a REF, this analysis step can yield a framework of growth areas and conservation areas, contributing to a regional vision that informs the transportation planning and begins the coordination among different agencies early on. Developing a regional growth framework requires close coordination with the local governments within a region, state, or other relevant geography. Transportation planners will need to work with local government staff and planners to understand the location of preferred growth areas, land use change, and anticipated levels of growth. These elements can be mapped, using control totals for the appropriate geography to ensure that overall growth is in line with expectations. The product that may result is a vision for the growth and development of an entire region. This goes beyond the typical jobs and population growth forecasts at the traffic analysis zone level and shows the location of specific opportunities that can be used to integrate transportation plans with growth management goals and policies.

## Notable Practices

### [Puget Sound Regional Council Growth Framework](#)

The Puget Sound Regional Council uses a regional growth framework to align its transportation investments with the region’s growth areas. The council has designated 29 growth centers which are priority areas for transportation investment.



## Tools for Documentation

The third pillar of the National PEL Framework is Documentation. Good planning is always supported by thorough and accessible documentation. This is especially necessary in the application of PEL as materials may often be used later in the NEPA process. Ensuring that NEPA practitioners can find and use the materials developed to support planning decisions and processes, documentation must be a priority. Knowing who the future user or audience may be as well as potential purposes for the information can help you tailor the type of documentation you collect and where it is stored. The following section describes different methods of documentation, and details specific types of documentation related to planning decisions and documents needed to inform the NEPA process.

### Planning Documentation

Project diaries are used to document important planning decisions and information throughout the transportation planning process. These diaries can be helpful for new project staff, sharing with other agency staff, and when linking planning processes and decisions to later efforts including NEPA.

#### Notable Practices

##### [Florida Environmental Screening Tool](#)

Florida's Environmental Screening Tool (EST) stores project diaries of project analyses, commitments and decisions that have been made from early project screenings. The information is packaged as a Planning or Programming Summary Report that is used as a reference in support of the NEPA scope and study. Planning products, including the project description, project purpose and need statement, participating and cooperating agencies, alternatives evaluation, and agency comments and commitments are housed within the EST.

##### [Colorado DOT PEL Questionnaire](#)

To address the problem of zero personnel overlap between the planning and NEPA phases of a project, Colorado DOT created a questionnaire to act as a summary of the planning process which could be documented as passed along. It is intended to support NEPA analysis and save both time and money in the process. The questionnaire is intended to be used by project managers throughout the planning process and provides a framework to document information related to the history of important decisions and their related analysis.

### Documenting Planning Decisions: Purpose and Need, Indirect and Cumulative Screening, Alternatives Screening

The documentation of planning decisions and analysis leads to better planning products and more streamlined processes. This is particularly true when projects are brought to NEPA for environmental analysis. If a PEL approach is employed and well documented before NEPA, the decisions and analysis can be used to inform the NEPA process and serve as the foundation for a project's purpose and need, indirect and cumulative effects screening, and alternatives evaluation.

#### Notable Practices

## [North Carolina Interagency Coordination Protocol Documentation Guidance and Tools](#)

North Carolina DOT established a coordination protocol with the Institute for Transportation Research and Education to support long range transportation planning in collaboration with important process partners. The Protocol includes guidance on saving information to the comprehensive transportation plan protocol and on collecting documentation from agencies as they provide information on plans and primary data. This guidance is referenced throughout the six protocols and the procedure to update the protocol.

## [CO 66 PEL Study Purpose and Need Document](#)

Colorado conducts PEL studies for select corridors as part of their long-range transportation planning process. Developing a purpose and need statement is one of the first steps in this process. These statements are intended to articulate the vision for projects along the corridor, identify the greatest needs the projects should address, serve as the foundation for the alternatives analysis procedure, and provide a way to determine both short and long-term transportation priorities. An example document for Colorado's State Highway 66 is linked on the project website.

## [North Carolina Problem Statement](#)

In North Carolina, Problem Statements are developed with the goal of being used as a starting point for NEPA or SEPA. They therefore are also intended to save time in preparing or agreeing to the purpose and need statement during project development. Detailed Procedure and Guidance documents are linked as resources with specifics included on necessary documentation.

## [North Carolina Alternatives and Scenario Analysis](#)

North Carolina has created a procedure that provides a consistent methodology for completing and documenting alternative and scenario analysis in comprehensive transportation and long-range planning. Alternatives and scenario analysis can vary greatly depending on available staff and funding resources, so a consistent procedure for analysis and documentation can ensure that results are useful in long range planning and for future project development. An Alternatives and Scenario Analysis Procedure template and Flowchart are included as linked resources.

Approved: \_\_\_\_\_  
Revised: \_\_\_\_\_  
Version X

### Alternatives and Scenario Analysis Procedure

#### **Description**

*The purpose of this procedure is to provide a consistent methodology for completing and documenting alternative and scenario analysis in comprehensive transportation and long range planning.*

#### **Responsibility**

*It is the responsibility of the **Project Engineer (PE)** to:*

- *Conduct Alternative and Scenario Analysis*
- *Document the information collected and used to complete the process, the results of the analysis, and the decisions made*

*It is the responsibility of the **MPO, RPO, or local planner** to:*

- *Identify potential transportation solutions*
- *Evaluate alternatives and scenarios*