

# MDOT SHA Exchange: Planning and Environment Linkages (PEL)

## DRAFT PROCEEDINGS

**Date:** December 12 - 13, 2017

**Host Agency:** Maryland Department of Transportation State Highway Administration

**Location:** Hanover, Maryland

**Participating  
Agencies:**

Baltimore City Department of Transportation  
Baltimore Metropolitan Council  
Environmental Protection Agency  
FHWA Colorado Division Office  
FHWA Maryland Division Office  
FHWA North Carolina Division Office  
FHWA Office of Planning  
FHWA Office of Project Development and Environmental Review  
FHWA Resource Center  
Maryland Department of Transportation State Highway Administration  
Maryland Department of Environment  
Maryland Department of Planning  
Metropolitan Washington Council of Governments  
North Carolina Department of Transportation (NCDOT)  
U.S. Army Corps of Engineers (USACE)  
U.S. Department of Transportation – Volpe Center  
U.S. Fish and Wildlife Service (FWS)

This report documents the December 12-13, 2017, Planning and Environment Linkages (PEL) Peer Exchange held in Hanover, Maryland, sponsored by the Federal Highway Administration (FHWA) Office of Planning and the Office of Project Development and Environmental Review.

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### INTRODUCTION AND BACKGROUND

The Federal Highway Administration (FHWA) Maryland Division and the Maryland Department of Transportation State Highway Administration (MDOT SHA) coordinated with two other States and FHWA Office of Planning and the Office of Project Development and Environmental Review for a Planning and Environment Linkages (PEL) Peer Exchange on December 12-13, 2017, in Hanover, Maryland.

Maryland coordinates major programming efforts through a statewide Consolidated Transportation Program (CTP). As part of this effort, major capital projects have been traditionally evaluated through a “Project Planning” process as major NEPA efforts. MDOT SHA is currently transitioning from this model to allow for earlier assessment of transportation conditions and needs, potential human and natural environment impacts from proposed projects, and mitigations to those impacts. MDOT SHA hopes this transition, as informed by the December PEL Peer Exchange, will allow Maryland to apply PEL strategies to transportation planning and environmental review processes to improve transportation and environmental outcomes, reduce permitting delays, and accelerate infrastructure delivery.

### Key Learning Objectives

The key learning objectives of the Peer Exchange included:

- Discuss PEL approaches and PEL products.
- Discuss PEL’s relationship to NEPA process and understand statutory and regulatory requirements for taking advantage of PEL approaches.
- Discuss PEL approaches in peer states, including roles and responsibilities, benefits, and challenges.
- Discuss the evolution of MDOT SHA planning and environmental review processes.
- Identify recommendations and action items for MDOT SHA to more formally implement PEL approaches to project development and delivery.

### Key Action Items

Day 1 of the Peer Exchange consisted of FHWA and peer presentations designed to share information about PEL approaches and best practices and to raise awareness of current and emerging innovative practices in Colorado, North Carolina, and Maryland. Day 2 was reserved for all-participant and small-group breakout discussions to translate information from Day 1 into action items for MDOT SHA to carry out following the exchange. The assembled staff, peers, and FHWA facilitators collectively developed action items in five key areas, which are detailed in the report:

- Statewide Data Management and Use
- Public Involvement and Communication
- Stakeholder Involvement and Partnerships

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- Planning and Environment Process Timelines
- PEL Products and Technical NEPA Issues

### Peer Exchange Funding

This Peer Exchange was funded through the Second Strategic Highway Research Program (SHRP2) product [Expediting Project Delivery \(C19\)](#).<sup>1</sup> C19 is aimed at accelerating planning and environmental review processes for transportation projects. This product identifies 24 strategies for addressing or avoiding 16 common constraints to accelerating project delivery. These strategies represent innovative approaches to improve transportation decision-making that result in better projects and environmental outcomes. Applying these proven strategies saves time by allowing agencies to anticipate and reduce project delays in a collaborative manner with key partners and stakeholders.

This document summarizes the full proceedings of the Peer Exchange. The agenda is available in Appendix A and the list of participants is available in Appendix B. Additional resources related to the content discussed during the Peer Exchange is available in Appendix C. Presentations referenced in this event summary are available upon request.

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<sup>1</sup> [https://www.fhwa.dot.gov/goshrp2/Solutions/All/C19/Expediting\\_Project\\_Delivery](https://www.fhwa.dot.gov/goshrp2/Solutions/All/C19/Expediting_Project_Delivery)

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### PEER EXCHANGE PROCEEDINGS

#### Day 1: Information Exchange

##### Welcome and Pre-Workshop Survey Results

MDOT SHA Planning Director Scott Pomento and FHWA MD Division Office Assistant Division Administrator Bill Wade opened the Peer Exchange by welcoming participants and discussing the importance of coordination and collaboration amongst planners, engineers, and environmentalists to expedite project delivery in Maryland.

MDOT SHA Project Management Division Chief Barry Kiedrowski echoed Mr. Pomento and Mr. Wade's call for collaborative work and noted that this Peer Exchange is an opportunity for Maryland to discuss training needs, conduct knowledge sharing with peers, and develop realistic action items for all agencies in attendance.

Mr. Kiedrowski provided a summary of responses from a pre-workshop survey. The survey was distributed prior to the Peer Exchange to identify the current status, potential agency collaboration, and opportunities and challenges of the PEL approach in Maryland. A summary of the pre-workshop survey results is available in Appendix D.

Peer Exchange Facilitator Rob Ayers, Environment Program Specialist at the FHWA Resource Center, provided an overview of the Peer Exchange and reviewed the meeting agenda. Mr. Ayers noted that while Maryland participants may not be using PEL terminology, they have been using PEL planning products. Mr. Ayers stressed that the PEL approach is flexible and can be used to make planning decisions to inform the environmental review process.

#### FHWA HQ: What is PEL?

James Gavin from the FHWA Office of Project Development and Environmental Review and Jody McCullough from the FHWA Office of Planning provided background and regulatory information on the PEL Approach. PEL represents a collaborative and integrated approach to transportation decision-making that considers benefits and impacts of proposed transportation system improvements to the environment, community, and economy during the transportation planning process.

PEL uses the information, analysis, or products developed during planning to inform the environmental review process, including the National Environmental Policy Act of 1969 (NEPA) process. Use of the PEL process is not required for project development; however, if it is used, PEL planning products (planning results and/or planning decisions), including products involved in the development of the purpose and need and elimination of alternatives, NEPA requirements must be followed in order to incorporate these products into the NEPA process. Transportation planning activities undertaken as part of the planning process prior to the

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initiation of NEPA are eligible for Planning (PL) and State Planning and Research (SPR) funds, which is a major benefit of the PEL process.

### *Regulation and Legislation*

The Council on Environmental Quality (CEQ) 40 U.S.C 1500.5 provides regulation on the process of implementing NEPA. The CEQ regulations include incorporating NEPA into early planning and the incorporation by reference of information that will “cut down on bulk.” 23 U.S.C. Section 168 allows the FHWA and Federal Transit Administration (FTA), as NEPA lead agencies, to use the results or decisions of State DOTs, Metropolitan Planning Organizations (MPOs), or public transportation operator led corridor and subarea planning studies as part of the environmental review process under NEPA so long as legal requirements are met. Corridor and subarea studies as discussed in 23 CFR 450.212 and 450.318 can be used to produce a wide range of analyses or decisions for FHWA/FTA review, consideration, and possible adoption in the NEPA process for an individual transportation project.

23 CFR 771.111 discusses the policies and procedures of FHWA and FTA for implementing the NEPA and the CEQ regulations and encourages early coordination and public involvement. This includes the exchange of information from the inception of a proposal for action, to preparation of the environmental document. 23 U.S.C. Section 139 describes the role and responsibilities of participating agencies under the environmental review process and provides an opportunity for involvement by participating agencies and the public. Efficient and effective coordination through PEL can support acceleration of project delivery. Section 139 (23 U.S.C. 139 (f)(4)(E)) describes reduction of duplication between the evaluation of alternatives under NEPA and the metropolitan transportation planning process or a State environmental review process. The key for using these processes for acceleration of project delivery is following Section 139 (23 U.S.C. 139 (f)(4)(E)) and meet the conditions of Section 168 (23 U.S.C. 168 (d)), so they mirror the NEPA requirements.

Planning products can be used to identify the purpose and need and alternatives, which are further refined during the NEPA process. The adoption, use, or incorporation by reference of planning products, including PEL studies, for future use in NEPA proceedings may only occur when the lead federal agency determines the study met the conditions.

### *Conditions*

For PEL to be included in the NEPA process, certain conditions must be satisfied. Many of the conditions for PEL are completed during the normal transportation planning process. However, there are oversight responsibilities that the field staff must ensure are adhered to for planning products to be viable for use in the environmental review process. An overview of conditions

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can be found in [FHWA's PEL Question and Answer](#).<sup>2</sup> Additional guidance is available in Appendix A of 23 CFR 450, [Guidance on Using Corridor and Subarea Planning to Inform NEPA](#)<sup>3</sup> and [FHWA's PEL Question and Answer](#).<sup>4</sup>

FHWA recommends documenting planning-level analysis that can be used to inform NEPA. One tool to accomplish this is the [Planning/Environmental Linkages Questionnaire](#).<sup>5</sup>

## *Question and Answer*

### **Q: What agency is responsible for public involvement and notice?**

**A:** The lead agency or project sponsor is who would coordinate the best method for conducting public outreach. The key is transparency within the process.

### **Q: What is the difference between Tier 1 NEPA and PEL?**

**A:** During Tier 1 NEPA, planning decisions are being made but it is within the NEPA time allotment. PEL allows you to make planning decisions before beginning the NEPA process. FHWA is encouraging States to finalize the NEPA process in as short of a time frame as possible. Additionally, once NEPA begins planning funds become ineligible.

## **MDOT SHA: Planning and Environmental Processes and Tools**

MDOT SHA Project Management Division Chief Barry Kiedrowski provided background information on MDOT SHA efforts related to PEL. MDOT has been modifying their traditional project planning and NEPA process to be a more streamlined effort. To increase inter-agency coordination, MDOT utilizes the Transportation Environmental Regulatory Process (TERP), which focuses on a series of concurrence points and continuous public and resource agency involvement in an effort to expedite project delivery.

MDOT has also developed the Consolidated Transportation Program (CTP) which serves as the State's six-year capital investment program for transportation. MDOT works with citizens, local jurisdictions, local/state delegations, and MPOs to include projects that preserve transportation system investments, enhance transportation services, and expand transportation opportunities throughout the State. MDOT is interested in utilizing PEL guidance to meet their goals including transportation system preservation, operational improvement, informing project scopes early on, and overall expedited project delivery.

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<sup>2</sup> <https://www.fhwa.dot.gov/hep/guidance/pel/pelfaq16nov.cfm>

<sup>3</sup> [https://www.environment.fhwa.dot.gov/env\\_initiatives/pel/corridor\\_nepa\\_guidance.aspx](https://www.environment.fhwa.dot.gov/env_initiatives/pel/corridor_nepa_guidance.aspx)

<sup>4</sup> <https://www.fhwa.dot.gov/hep/guidance/pel/pelfaq16nov.cfm>

<sup>5</sup> <https://www.fhwa.dot.gov/innovation/everydaycounts/edc-1/PEL-questionnaire.cfm>

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### Poster Session

MDOT SHA displayed existing Maryland PEL related efforts through a poster session in which participants circulated throughout the meeting space, visiting four poster presentations featuring the [Model of Sustainability and Integrated Corridors \(MOSAIC\)](#)<sup>6</sup> tool, system performance and data analytics, efforts for the [Watershed Resource Registry](#),<sup>7</sup> and examples of planning studies to demonstrate PEL-like efforts. This innovative approach generated interaction between peers, participants, and the host agency.

Below is a brief description of each of the posters:

#### **Model of Sustainability and Integrated Corridors (MOSAIC)**

The MOSAIC tool poster outlined the mission of MOSAIC, its project development framework, the types of projects MOSAIC can be used for, and the kinds of analysis done. The types of projects include a number of transportation projects, including lane additions, grade-separated interchanges, toll lanes, bus- or truck-only lanes, light rail, and road diets. Types of analyses include highway needs inventory, corridor and feasibility studies, and development mitigation review. MOSAIC can help kick-start planning processes and quickly identify potential environmental issues.

#### **System Performance and Data Analytics**

A poster on system performance and data analytics highlighted how performance-based planning and programming can be used to achieve goals in terms of safety, mobility, system preservation, and economy, environment, health, and energy. This poster outlined how to connect these goals with specific processes and programs as well as projects and outputs in order to achieve the outcome of a safe, well-maintained, and reliable transportation system.

#### **Watershed Resource Registry**

Maryland's WRR is an interactive GIS-based screening tool created to improve resource planning and mitigation decision-making using the watershed approach by integrating regulatory and non-regulatory programs. The poster provided information on how the WRR was developed and ways to navigate the tool.

#### **Demonstration of PEL Efforts**

Three posters were provided to demonstrate PEL-like efforts that have been completed in Maryland. The efforts included: 1) A PEL study conducted to identify potential transportation improvements for a corridor in MD 2) A corridor planning study for MD 223; and 3) A feasibility study for US 50. These studies demonstrated effort to link the planning process with NEPA.

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<sup>6</sup> [http://www.roads.maryland.gov/OPR\\_Research/MD-15-SHA-UM-3-7\\_MOSAIC-Phase3\\_Report.pdf](http://www.roads.maryland.gov/OPR_Research/MD-15-SHA-UM-3-7_MOSAIC-Phase3_Report.pdf)

<sup>7</sup> <http://www.roads.maryland.gov/Index.aspx?PageId=300>



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### MD iMAP Presentation

MDOT SHA GIS team members Craig Mackowiak and Marshall Stevenson provided information on [Maryland's iMap tool](#).<sup>8</sup> The MD iMAP platform was created to improve the quality and lower the cost of government services, through collective investment in and effective application of geospatial data and systems and to reach beyond government by making data freely and publicly available. MD iMAP used authoritative data to ensure it is in its raw form and has not been manipulated.

Mr. Stevenson and Mr. Mackowiak reviewed the capabilities of the GIS open data, ArcGIS online, imagery, composite locator, and Light Detection and Ranging (LiDAR) tools embedded in MD iMAP. These tools can be used during the initial planning process of environmental review to increase accuracy and expedite the process.

### CDOT: PEL Study Framework and Resources

#### *Introduction*

The Colorado Department of Transportation (CDOT) leads a PEL Program that primarily focuses on conducting larger-scale PEL studies. The program focuses on fostering agency outreach, environmental scoping, and mitigation opportunities.

#### *Overview*

Colorado Department of Transportation (CDOT) PEL Program Manager Lindsay Edgar presented on CDOT's PEL program. CDOT has conducted 15 PEL studies since 2008. Of the 15 PEL studies, 12 have projects currently going through the NEPA process. CDOT developed a [PEL Handbook](#)<sup>9</sup> as a primary reference for conducting PEL studies. The handbook incorporates lessons learned, current and best practices, and new legislative requirements. CDOT conducts an annual PEL training course based on the PEL Handbook. The course consists of five training modules, group exercises, and discussion sessions. CDOT or a local agency can lead a PEL study with the FHWA Colorado Division assistance and involvement at major coordination points. Agency participation in PEL is voluntary and non-binding; if an agency chooses not to provide input, the PEL products can still be carried forward into the NEPA process with the recognition that additional coordination will likely be required during the NEPA process.

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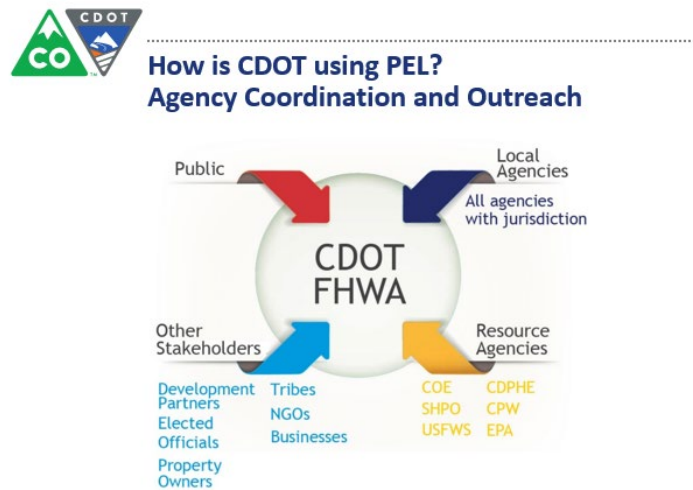
<sup>8</sup> <http://imap.maryland.gov/Pages/default.aspx>

<sup>9</sup> <https://www.codot.gov/programs/environmental/planning-env-link-program/pel-handbook-january-2016>

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## Agency Outreach

CDOT PEL guidance communicates that a significant portion of the PEL study is agency coordination and outreach to the public, local agencies, resource agencies, and other stakeholders.



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**Figure 1.** CDOT Agency Coordination and Outreach

As illustrated in Figure 1, agency coordination and outreach feeds into CDOT, which can either lead the study or provide support to a local agency leading a study. FHWA must accept the study and will engage in coordination but will not directly participate. Colorado established the [Transportation Environmental Resource Council \(TERC\)](#)<sup>10</sup> to discuss State transportation issues. The TERC consists of 18 members, including Federal agencies, State agencies, regional governments, MPOs, and other organizations. Because the TERC brings together all of these stakeholders, it serves as a key component for agency coordination and outreach in terms of planning for environmental stewardship and for supporting the PEL process. A Memorandum of Understanding (MOU) regarding PEL was signed with TERC agencies to promote coordination in the planning process. CDOT has found through using PEL that it aides in early environmental scoping and evaluation. CDOT has also found that PEL provides many benefits, including providing a better understanding of environmental constraints, focusing studies on important resources, and developing mitigation strategies.

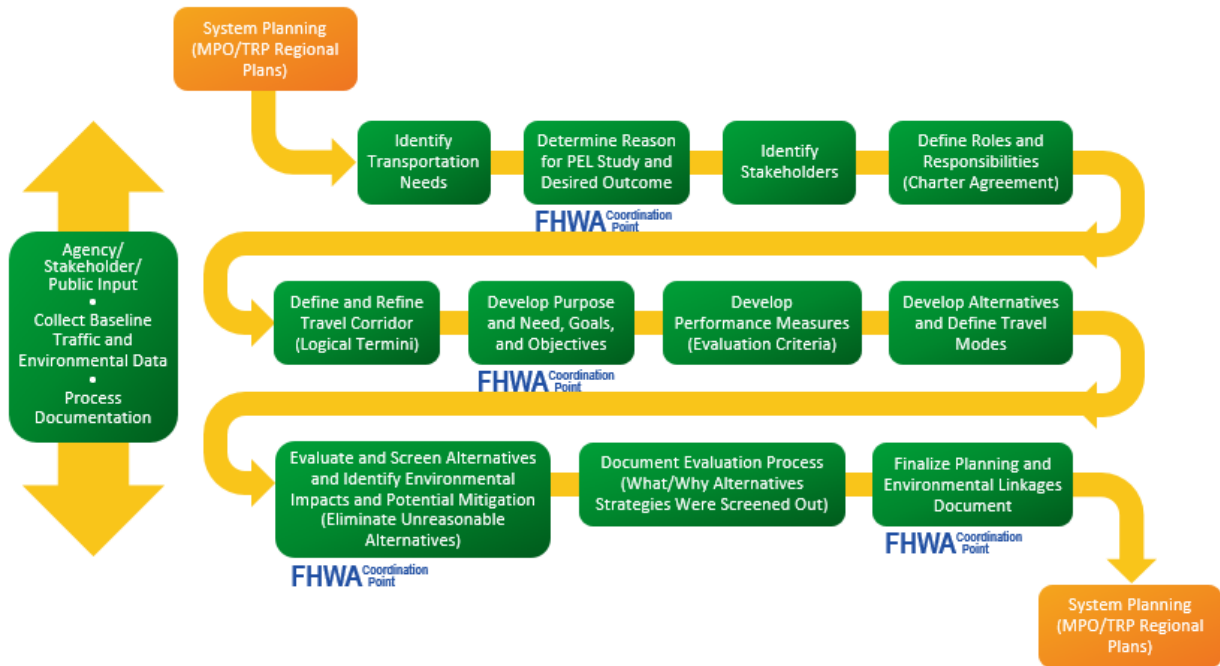
Additionally, CDOT provides educational outreach to internal staff and external stakeholders to inform interested parties on how to conduct PEL studies, as well as the benefits of PEL studies.

<sup>10</sup> <https://www.codot.gov/programs/environmental/transportation-environmental-resources-council-terc>

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## How is CDOT Using PEL? PEL Process Flowchart



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**Figure 2.** CDOT PEL Process Flowchart

Figure 2 shows the PEL process as CDOT has implemented it. This flowchart also shows the four key points where FHWA coordination occurs to ensure acceptance of the PEL study and to ensure that PEL study results can be carried forward into the formal NEPA process. Coordination, documentation, and data collection occur throughout the process.

### *Environmental Scoping and Evaluation*

Ms. Edgar clarified that before conducting a PEL study, it is important to determine that it is the right tool and that there is a need for the study to be completed. A PEL study provides a “head start” to the NEPA process, streamlining NEPA document preparation and allowing for incorporation by reference into the NEPA process. In Colorado, data from PEL studies can be used directly in NEPA if not more than 5 years old. If older than 5 years, the data will need to be revisited, updated, and supplemented during NEPA.

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CDOT also employs the FHWA PEL questionnaire in its PEL studies. The questionnaire is used at the beginning of the process to help scope the PEL study and is used throughout the process to verify steps and study assumptions. The questionnaire is particularly helpful for ensuring that PEL planning products can be carried forward into the NEPA process.

### *Mitigation Opportunities and Partnerships*

CDOT utilizes PEL to assist with environmental stewardship. For example, partnerships with Colorado Parks and Wildlife has improved wildlife crossings and the use of visual impact assessments led to the development of visual impacts and design guidelines to mitigate visual impacts related to projects.

### *Question and Answer*

**Q: What benefits have you seen from using a PEL study?**

**A:** CDOT has observed a reduction in time and required documentation during the Interstate 50 project which conducted a PEL study.

**Q: What is a scenario when PEL is the best strategy?**

**A:** If the project would benefit from additional planning analysis prior to beginning NEPA.

Mr. Ayers noted that PEL is flexible and agencies are not required to use the entire PEL process. Agencies should identify what planning products could benefit when using PEL in the planning process and then apply portions of the PEL process that are beneficial to inform NEPA.

## NCDOT: Long Range Planning and Environmental Integration

### *Introduction*

The North Carolina Department of Transportation (NCDOT) applies PEL through its Integration initiative. Integration in North Carolina is a planning process that provides a seamless connection between long-range transportation planning and project development.

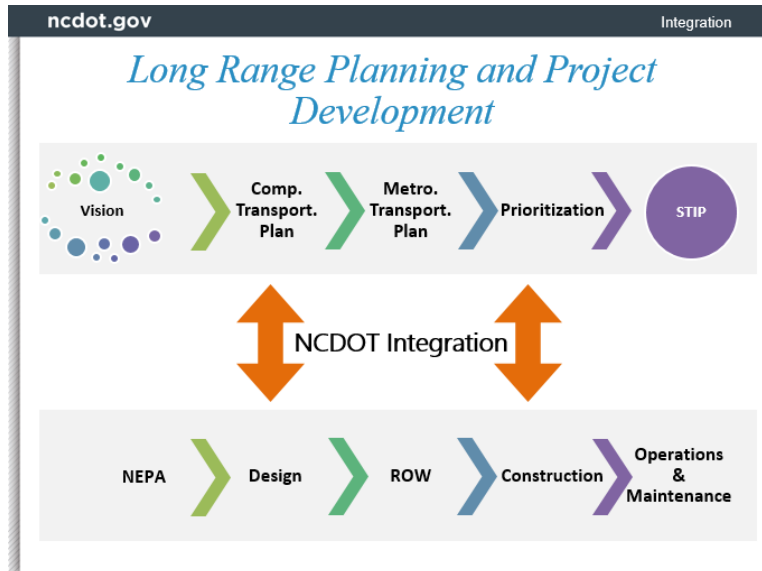
### *Overview*

NCDOT staff engineer Alena Cook presented NCDOT's effort to integrate long-range planning with project development. Ms. Cook noted that North Carolina uses the term "Integration" instead of PEL, but the terms are more or less synonymous. At its core, Integration is about linking land use planning and a community's vision with long-range transportation planning and NEPA project planning to deliver projects in a timely manner that align with a community's needs and vision. North Carolina requires that each county, municipality, and MPO, with the cooperation of the NCDOT, develop a Comprehensive Transportation Plan (CTP), which is a long-range multimodal plan that identifies transportation improvement needs and proposes

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solutions over a 25- to 30-year period. NCDOT, with its planning partners, implements Integration through the CTP process (see Figure 3).



**Figure 3.** NCDOT Long-Range Planning and Project Development Connections through Integration

### *Implementation Teams*

To increase inter-agency coordination, NCDOT developed the Integration Implementation Team (IIT). IIT is a multi-agency team that provided a forum for long-range planners, NEPA practitioners, and other stakeholders to work together on the implementation of the Integration process. This communication and inter-agency coordination was a major key to North Carolina's success. The IIT includes members from NCDOT, FHWA, MPOs/RPOs, and key resource agencies, including the U.S. Army Corps of Engineers, the NC Department of Environmental Quality, and the U.S. Fish and Wildlife Service. NCDOT's Transportation Planning Branch acts as the project manager for the team to facilitate communication and promote coordination throughout the entire Integration process, which has been key to its success.

Participants were particularly interested in NCDOT's alternatives and scenario analysis Alternatives Evaluation Table (Appendix E), which is used to document the decision making process in long-range planning regarding various factors, such as purpose and need, environmental screening, and goals and objectives. Ms. Cook noted that completing this table supports the effort to document all phases of Integration, which is imperative to the overall success of the Integration process and its ability to be incorporated into NEPA.

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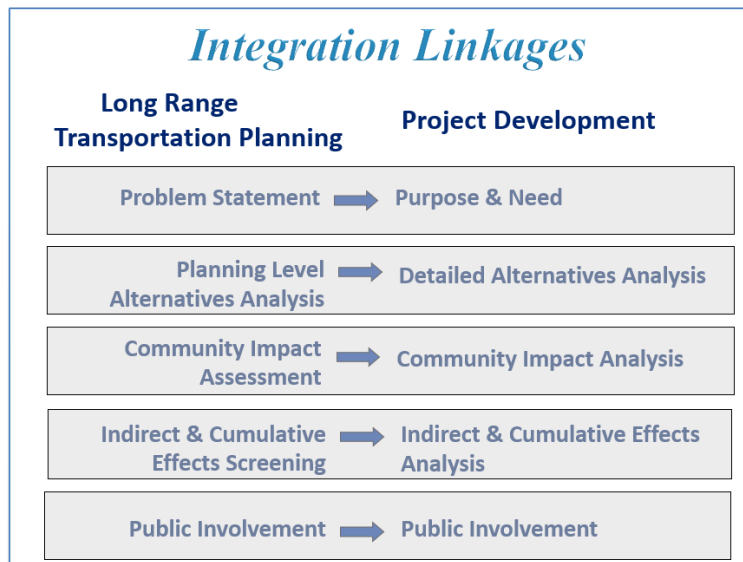
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### *Benefits of Integration*

NCDOT has found that the Integration approach provides many benefits to communities. Improvements in coordination across agencies and improved documentation have improved efficiency in the planning process and reduced redundancies throughout the planning process. There are also some indications that project schedules and cost estimates have been improved as a result of Integration as well. Public engagement processes have been clarified through Integration, reducing confusion and frustration.

### *Integration Linkages*

NCDOT began Integration in 2005 and held a series of multidisciplinary workshops and outreach efforts to map the project development and planning processes and identify “linkages.” Teams were established and tasked with identifying challenges and opportunities between CTPs and the project development process and developing best practices that can be used during the Integration process. Figure 4 illustrates the outcome of the workshops and displays where the link between long-range transportation planning and project delivery exists.



**Figure 4.** NCDOT Integration Linkages

These linkages are central to achieving the connection between long-range transportation planning and project development in North Carolina. Specifically:

- The problem statement from the long-range transportation planning process informs the purpose and need for project development. This linkage clearly enumerates why a project is being undertaken and how it fits more broadly into the overall transportation planning landscape.

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- A high-level alternatives analysis undertaken in long-range transportation planning connects with the detailed alternatives analysis that is conducted at the project level by narrowing the possible alternatives to reasonable options for further evaluation.
- A broad community impact assessment leads into a community impact analysis at the project level by establishing key concerns and focus areas where detailed analysis is necessary for project development.
- The effects screening provides a broad outline that informs the effects analysis at the project level, where more detailed analysis is carried out.
- Public involvement conducted at the long-range transportation planning level provides early input that can shape the project development process and inform how additional public involvement should be carried out.

Ms. Cook noted that key factors to the success of Integration included strong agency relationships, quality data sharing, consistent documentation, and continuous outreach. Ms. Cook encouraged participants to visit the [NCDOT Integration Project website](#)<sup>11</sup> for tools that document the Integration approach and that are being used throughout North Carolina to implement the Integration process.

Ms. Cook highlighted the types of products that are developed throughout the stages of Integration linkages (see Figure 4). In particular, she discussed the 12 elements commonly used in community impact assessments to document community understanding, including:

- Population trends and projection
- Population diversity, environmental justice, and traditionally underserved populations
- Community character
- Schools/parks
- Public safety/emergency response
- Centers of community
- Community events and special event venues
- Economic conditions/jobs
- Development goals (new growth)
- Farming operations
- Natural resources
- Transportation choices

Ms. Cook also detailed the four core products that emerge from indirect and cumulative effects screening. These products include: (1) existing conditions assessment, (2) future growth potential assessment, (3) indirect and cumulative effects screening, and (4) best management

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<sup>11</sup> <https://connect.ncdot.gov/projects/planning/Pages/Integration-Project.aspx>

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practices recommendations. NCDOT piloted these four products and found that these products proved useful in long-range planning to decision-makers and communities, particularly because they provide a basis for project development as the formal NEPA process begins.

### *Question and Answer*

**Q: How is your DOT organized and how do you interact?**

**A:** Recently our DOT went through decentralization so additional activities, such as project development, are now managed in our 14 division offices. Different business units within the department handle various requirements, for example the Transportation Planning Division completes the long-range transportation planning, but coordinates with the division to ensure consistency.

**Q: How is the public reacting to Integration/PEL and how do you get the message out?**

**A:** Integration is a complex process, so NCDOT makes an effort to explain the planning and environmental review process from origin to construction to the public. Then we identify how Integration fits into the process and how it can expedite project delivery. NCDOT has found that transparency and consistent language regarding what is happening and why is key to a successful conversation.

### *Day 2: Key Themes and Action Items*

The agenda for Day 2 was designed to encourage interaction between host agency staff, the peers, and other participants and facilitators. The goal for the day was to identify key themes and develop action items for MDOT SHA to pursue following the workshop. Using the information exchanged on Day 1, the group worked through a series of sessions to dive deeper into the various challenges to implementing PEL, strategies to overcome those challenges, and tools that can improve the agency's capacity for successful implementation of PEL approaches, accelerating project delivery, and improving project outcomes.

### *Key Themes: Panel Dialogue with Peer DOTs and FHWA Division Offices*

Day 2 began with a recap of the Day 1 peer presentations, group discussions, and MDOT presentation stations. Mr. Ayers facilitated a panel discussion to further discuss the material from Day 1, featuring peers from Colorado: Lindsay Edgar from CDOT and Tricia Sergeson from the FHWA Colorado Division, and North Carolina: Alena Cook from NCDOT and Donnie Brew from the FHWA North Carolina Division.

Based on this panel discussion, the assembled group of presenters, facilitators, and MDOT staff collectively developed a list of five key thematic areas for further discussion in small groups:

- **Statewide Data Management and Use**
- **Public Involvement and Communication**



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- **Stakeholder Involvement and Partnerships**
- **Planning and Environment Approach Timelines**
- **PEL Products and Technical NEPA Issues**

### Action Items: Adapting PEL Approaches to MDOT SHA Projects

The Peer Exchange yielded actionable next steps. The afternoon of Day 2 was devoted to small-group exercises centered on the five themes identified in the morning session. MDOT SHA planning staff arranged participant seating to ensure a mix of staff with diverse duties and perspectives were present at each table.

### Breakout Session #1

The first breakout session included five tables organized around each of the key themes. Each table was given 1 hour and 15 minutes to come up with a list of the issues and/or opportunities present for each theme, with special attention paid to those issues and opportunities specific to MDOT SHA adapting PEL approaches to their projects. The facilitators revised the lists, duplicating some items under each theme; this demonstrates the interconnected nature of these key themes, and the need to work in a multi-disciplinary context to implement solutions across each thematic area.

- **Statewide Data Management and Use**
  - Impacts and flexibility of PEL on (other) agencies; comfort with pre-NEPA involvement (compared to well-established NEPA protocols).
  - Comfort level of resource agencies in using PEL data vs. NEPA data.
  - Appropriate level of data for PEL planning vs. NEPA? How often and in what way does pre-NEPA data need to be validated? How does the 5-year rule apply to PEL products?
  - Harnessing existing and emerging tools and increasing knowledge of and access to tools, to facilitate PEL (MOSAIC, ArcGIS online, etc.).
  - Helping to clarify appropriateness of tools for various activities
- **Public Involvement and Communication**
  - Communicating the difference from NEPA and managing the expectations of local municipalities and elected officials concerning the benefits of a PEL approach.
  - Ensuring high quality communication materials (such as visuals including 3D models, fly through, renderings, etc.) in lower-cost PEL studies (compared with major NEPA project efforts): reassessing cost-benefit of visualizations as technology becomes more affordable.
  - Emphasizing use of modern communication channels like social media.
  - Clarify expectations for level of public involvement - what are the goals of PEL involvement (for members of the public and partner agencies).

# MDOT SHA Exchange: Planning and Environment Linkages (PEL)

## DRAFT PROCEEDINGS

- Articulating benefits (cost/time savings, other benefits) of PEL: Consolidate public involvement events/efforts (e.g. do not duplicate public involvement between PEL and NEPA).
- Selling points for public interest and regulatory/resource agencies' participation in PEL: front-loading efforts - clarify time/cost savings and project outcome benefits (e.g. better public access, resource protection, mitigation benefits, etc.).
- **Stakeholder Involvement and Partnerships**
  - Comfort level of resource agencies in using PEL data vs. NEPA data.
  - Roles of MPOs / RPOs in contributing to PEL?
  - What is the potential for planning organizations to play a role in expanding the PEL approach / PEL planning product development?
  - Impacts of flexibility of PEL on agency comfort with pre-NEPA involvement (compared to well-established NEPA protocols).
  - Could PEL allow expanded coordination/collaboration with local agencies and municipalities?
  - Managing expectations of local municipalities and elected officials concerning benefits of the PEL approach (communicating the difference from NEPA).
  - Clarify expectations for level of public involvement - what are the goals of PEL (public/agencies).
  - NC Integration Implementation Team - developing similar group in MD to spearhead PEL approaches and development of standardized protocols.
  - Selling points for public interest and regulatory/resource agencies' participation in PEL: front-loading efforts - clarify time/cost savings – Section 106/APE questions.
- **Planning and Environmental Approach Timelines**
  - Risk of data shelf-life from planning/PEL activities remaining eligible for use in NEPA (preserve time savings?).
  - What other forms of input (beyond typical data sources) are appropriate to initiate a PEL study? (Public and elected/political input, etc.).
  - Use state programming processes to identify statewide priorities through involvement of local governments (their use of the PEL approach to help them identify/articulate priorities).
  - Map planning/project development process; how to best use products from planning, MPOs, etc. Identify and clarify baseline.
  - NC Integration Implementation Team - developing similar group in MD to spearhead PEL approaches and development of standardized protocols.
  - Discussing when PEL starts. Timing of PEL product development.
  - Clarifying where we are in the process.
- **PEL Products and Technical NEPA Issues**

# MDOT SHA Exchange: Planning and Environment Linkages (PEL)

## DRAFT PROCEEDINGS

- Clarifying mechanisms in PEL that help ensure planning products are eligible for use in NEPA.
- Determining when Tier 1 or other existing NEPA protocols remain appropriate; determining the applicability of the range of PEL products.
- Shelf life of PEL products.
- Clarifying mechanisms for incorporating/adopting PEL planning products by reference in NEPA.
- Articulating benefits (cost/time savings, other benefits) of PEL? Suggestion: defining purpose and need, NCDOT Integration-style assessment in planning
- Process for informing NEPA through incorporation of PEL Products by reference.
- Selling points for public interested and regulatory/resource agencies' participation in PEL: front-loading efforts - clarify time/cost savings – Section 106/APE questions.
- Harnessing existing and emerging tools and increasing knowledge of and access to tools, to facilitate PEL (MOSAIC, ArcGIS online, etc.).
- Helping to clarify appropriateness of tools for various activities
- Documentation to mitigate PEL product development risk of class of action determination (EA/CE instead of EIS?).
- Clarifying mechanisms in PEL that help ensure planning products are eligible for use in NEPA.

### *Breakout Session #2*

In the final session of Day 2, participants were invited to shuffle their seating to choose the table and theme of their choice. An additional round of small-group breakouts included a set of more specific questions for participants to consider within the context of the theme and the bullet points produced by the first breakout session. Acknowledging that the first round of brainstorming produced a broad range of potential issues and opportunities, this second session was designed to result in action items for MDOT SHA to pursue following the workshop. Each breakout group was asked to identify the following items for the theme at their table:

- **Issue:** What is the primary issue or challenge to taking advantage of PEL in this thematic area?
- **Opportunity:** How can this issue be addressed or solved to encourage use of PEL approaches to streamline project delivery?
- **Who:** What agency(s) or department(s) should be responsible for leading this action item?
- **Actions:** Articulate the specific next steps necessary to being work.

The following action items were then developed by each table:

- **Statewide Data Management and Use**

# MDOT SHA Exchange: Planning and Environment Linkages (PEL)

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- **Issue:** Uneven data quality across national, state, regional and local owners, and within different overlapping datasets.
- **Opportunity:** Use the PEL process to identify: 1) possible data, and 2) relevant data, and assess federal, state, regional, local unevenness.
- **Who:** State-led group of data owners.
- **Actions:**
  - Develop a matrix of maximum data that is informative (to transportation projects and environmental resources).
  - Define owners and level of analysis, data expiration date, data generation date.
  - Design a process to mechanize (as much as possible) data collection, tracking, publishing, and updating.
- **Public Involvement and Communication**
  - **Issue:** Do a better job of communicating about PEL (recognize PEL could be a new concept for public, even if PEL products are already known through existing planning or NEPA processes).
  - **Opportunity:**
    - Identify existing suite of public involvement and communication tools from NEPA outreach. Modify to increase ease of use and engagement of public; includes education of public about the PEL approach (in addition to project content).
    - Step-up interaction/collaboration with MPOs in engaging their constituents.
    - Develop an MDOT PEL communications plan.
  - **Who:**
    - MDOT SHA project teams must understand and embrace PEL.
    - MDOT Office of Communications (top down media dissemination/social media).
    - Project-based public outreach support teams.
    - IT support.
    - Senior Managers – bringing TSO and elected officials along in adoption of the PEL approach and its benefits.
    - Audiences include the general public; but all stakeholders as well
  - **Actions:**
    - Initial conversation with MPOs and State for cooperation.
    - Think through communications plan to guide efforts.
    - Coordinate internally for SHA – internal management and elected officials.
    - Explore suite of modern communication tools: visualization, social media.

# MDOT SHA Exchange: Planning and Environment Linkages (PEL)

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- **Stakeholder Involvement and Partnerships**
  - **Issue:** Varying capacity, sophistication, size, and context of MPOs and RPOs.
  - **Opportunity:** Strengthen and support MPOs' capacity to lead the PEL approach.
  - **Who:**
    - MPOs host/lead if they are larger/more sophisticated.
    - State/SHA liaisons assist for smaller/less sophisticated MPOs/RPOs.
  - **Actions:**
    - Assess capacity across MPOs/RPOs.
    - Build working groups comprised of State/SHA/MPO partners to coordinate development of the PEL approach at MPO-level.
    - Identify resources to carry out process.
- **Planning and Environment Approach Timelines**
  - **Issue:** When to use PEL (and when not to use PEL)?
  - **Opportunity:** Clarify different types of studies/PEL approach to consistently identify when to use PEL and when NOT to.
  - **Who:**
    - SHA Office of Planning.
    - Districts within Office of Traffic and Safety.
    - Transportation Business Units (units within MDOT).
  - **Actions:**
    - Categorize study types.
    - Interview internal stakeholders.
    - Create briefing to document findings including typical study types/outcomes (e.g. decision tree).
- **PEL Products and Technical NEPA Issues**
  - **Issue:** Lack of statewide understanding of what constitutes "PEL."
  - **Opportunity:**
    - Work with Modes/TBUs/MPOs to define a "guidebook" defining PEL and the PEL approach.
    - Focus on multimodal projects.
    - Plan for guidebook updates to adapt/adopt new technologies into processes; and to incorporate changing priorities at the local, state, or federal levels.
  - **Who:** MDOT SHA Planning leading a team of modes/TBUs/MPOs.
  - **Actions:**
    - Identify funding.
    - Secure management buy-in.
    - Form guidebook management team.
    - Produce draft and final guidebook.

# MDOT SHA Exchange: Planning and Environment Linkages (PEL)

## DRAFT PROCEEDINGS

- Advertise guidebook to relevant groups.

### CLOSING REMARKS

FHWA summarized the benefits and goals of PEL, clarified questions, and promoted PEL resources and activities that are underway that will support PEL implementation.

Following the final breakout session, Mr. Kiedrowski and Ms. Mar closed the Peer Exchange by thanking participants and reiterating MDOT SHA's commitment to implementing the identified action items, linking planning to NEPA.

# MDOT SHA Exchange: Planning and Environment Linkages (PEL)

## DRAFT PROCEEDINGS

### Appendix A – Agenda

| <b>DAY 1 – Tuesday, December 12, 2017</b>   |   |
|---|---|
| <b>Location: MDOT SHA - 7491 Connelley Dr, Hanover, MD 21076</b><br><i>(Access building from Transport Dr.)</i> |   |
| <b>TIME</b>   | <b>SESSION – Orientation and Introduction to Content</b>  |
| <b>8:00 – 8:30 am</b>   | <b>Networking</b>   |
| <b>8:30 – 8:45 am</b>   | <b>Opening Remarks</b> <ul style="list-style-type: none"> <li>— C. Scott Pomento, P.E., MDOT SHA Planning Director</li> <li>— Bill Wade, FHWA MD Division Office, Assistant Division Administrator</li> </ul> |
| <b>8:45 – 9:00 am</b>   | <b>Introduction and Pre-Workshop Survey Review</b> <ul style="list-style-type: none"> <li>— Barry Kiedrowski, MDOT SHA</li> </ul>   |
| <b>9:00 – 9:15 am</b>   | <b>Ice Breaker</b> <ul style="list-style-type: none"> <li>— Rob Ayers, FHWA Facilitator</li> </ul>  |
| <b>FHWA PEL Overview</b>  |   |
| <b>9:15 – 10:00 am</b>  | <b>Defining PEL/Q&amp;A</b> <ul style="list-style-type: none"> <li>— Jody McCullough, FHWA PEL Team</li> <li>— James Gavin, FHWA PEL Team</li> </ul>  |
| <b>10:00 – 10:15 am</b>   | <b>Break</b>  |
| <b>MDOT SHA Overview</b>  |   |
| <b>10:15 – 11:45 pm</b>   | <b>MDOT SHA Planning and Environment Approach and Tools</b> <ul style="list-style-type: none"> <li>— Dennis Atkins, MDOT SHA</li> <li>— Barry Kiedrowski, MDOT SHA</li> </ul>                                 |
| <b>11:45 am – 1:15 pm</b>   | <b>Lunch</b> <ul style="list-style-type: none"> <li>— On your own</li> </ul>  |
| <b>Peer Overview</b>  |   |
| <b>1:15– 2:15 pm</b>  | <b>Peer CDOT Overview of PEL Approaches/Q&amp;A</b> <ul style="list-style-type: none"> <li>— Lindsay Edgar</li> </ul>   |
| <b>2:15 – 3:15 pm</b>   | <b>Peer NCDOT Overview of PEL Approaches/Q&amp;A</b> <ul style="list-style-type: none"> <li>— Alena Cook</li> </ul>   |
| <b>3:15 – 3:30 pm</b>   | <b>Break</b>  |
| <b>3:30 – 4:30 pm</b>   | <b>Peer and Participants Q&amp;A</b> <ul style="list-style-type: none"> <li>— Rob Ayers, FHWA Facilitator</li> </ul>  |
| <b>4:30 – 4:45 pm</b>   | <b>Preview of Day 2</b> <ul style="list-style-type: none"> <li>— Rob Ayers, FHWA Facilitator</li> </ul>   |

# MDOT SHA Exchange: Planning and Environment Linkages (PEL)

## DRAFT PROCEEDINGS

| <b>DAY 2 – Wednesday, December 13, 2017</b>   |   |
|---|---|
| <b>Location: MDOT SHA - 7491 Connelley Dr, Hanover, MD 21076</b><br><i>(Access building from Transport Dr.)</i> |   |
| TIME  | SESSION – Adopting PEL Approaches to MDOT SHA Processes and Projects  |
| 8:00 – 8:30 am  | <b>Networking</b>   |
| 8:30 – 9:30 am  | <b>Developing Key Theme Action Items: Adapting PEL Approaches to MDOT SHA Projects</b> <ul style="list-style-type: none"> <li>— Jody McCullough, James Gavin, Rob Ayers, FHWA Facilitators</li> <li>— Lindsay Edgar, Alena Cook, Peer Facilitators</li> <li>— Barry Kiedrowski, MDOT SHA Facilitator</li> </ul>   |
| 9:30 – 9:45 am  | — Break   |
| Panel Discussion  |   |
| 9:45 – 11:30 am   | <b>Panel and Participant Dialog to Explore Key Themes</b> <ul style="list-style-type: none"> <li>— Lindsay Edgar, CDOT</li> <li>— Alena Cook, NCDOT</li> <li>— Barry Kiedrowski, MDOT SHA</li> <li>— Rob Ayers, FHWA Facilitator</li> </ul>   |
| 11:30 am – 12:45 pm   | <b>Lunch</b> <ul style="list-style-type: none"> <li>— On your own</li> </ul>  |
| Breakout Sessions   |   |
| 12:45 – 2:00 pm   | <b>Small Groups – Session 1</b> <ul style="list-style-type: none"> <li>— Deeper dive on specific action items from working session</li> </ul> <b>Small Group Report-out / MDOT Reflections</b> <ul style="list-style-type: none"> <li>— 5-minute summary reports from each small group facilitator/recorder</li> <li>— Rob Ayers, FHWA Facilitator</li> </ul> Peer feedback and reflections on breakout reports/ideas/proposals |
| 2:00 – 2:15 pm  | <b>Break</b>  |
| 2:15 – 3:45 pm  | <b>Small Groups – Session 2</b> <ul style="list-style-type: none"> <li>— Deeper dive on specific action items from working session</li> </ul> <b>Small Group Report-out / MDOT Reflections</b> <ul style="list-style-type: none"> <li>— 5-minute summary reports from each small group facilitator/recorder</li> <li>— Rob Ayers, FHWA Facilitator</li> </ul>   |
| 3:45 – 4:45   | <b>Closing Remarks</b> <ul style="list-style-type: none"> <li>— Barry Kiedrowski, MDOT SHA</li> <li>— Jeanette Mar, FHWA MD Division Office</li> </ul>  |



# MDOT SHA Exchange: Planning and Environment Linkages (PEL)

## DRAFT PROCEEDINGS

### Appendix B – Participant List

| Name              | Agency  |
|-------------------|---|
| Karen Arnold      | Maryland Department of Transportation State Highway Administration (MDOT SHA) |
| Obianuju Ani      | MDOT SHA  |
| Steve Archer      | MDOT SHA  |
| Dennis Atkins     | MDOT SHA  |
| Rob Ayers         | FHWA Resource Center  |
| Jeremy Beck       | MDOT SHA  |
| Donnie Brew       | FHWA NC Division Office   |
| Aviva Brown       | MDOT SHA  |
| Nora Bucke        | MDOT SHA  |
| Madison Burke     | Volpe/ USDOT  |
| Virginia Burke    | MDOT SHA  |
| Donna Buscemi     | MDOT SHA  |
| Jonah Chiarenza   | Volpe/ USDOT  |
| Trevor Clark      | U.S. Fish and Wildlife Service (FWS)  |
| Alena Cook        | North Carolina Department of Transportation (NCDOT)                           |
| Joe DaVia         | U.S. Army Corps. of Engineers (USACE) – Baltimore District                    |
| Lindsay Donnellon | FHWA MD Division Office   |
| Lindsay Edgar     | Colorado Department of Transportation (CODOT)                                 |
| Yu Gao            | Metropolitan Washington COG (MWCOG)   |
| James Gavin       | FHWA Office of Project Development and Environmental Review                   |
| George Gurara     | MDOT SHA  |
| Joe Harrison      | MDOT SHA  |
| Meredith Hill     | MDOT SHA  |
| Steve Hurt        | Maryland Department of Environment (MDE)                                      |
| Gladys Hurwitz    | Baltimore City Department of Transportation                                   |
| Cheryl Jordan     | MDOT SHA  |
| Barry Kiedrowski  | MDOT SHA  |
| Kelly Kosino      | MDOT SHA  |
| Ray Li            | USFWS   |
| Joe Kresslein     | MDOT SHA  |
| Joy Liang         | FHWA Maryland Division  |
| Heather Lowe      | MDOT MDTA   |
| Kevin Magerr      | Environmental Protection Agency (EPA)   |
| Craig Mackowiak   | MDOT SHA  |
| Jeanette Mar      | FHWA Maryland Division  |
| Jody McCullough   | FHWA Office of Planning   |

## MDOT SHA Exchange: Planning and Environment Linkages (PEL)

### DRAFT PROCEEDINGS

|                    |   |
|--------------------|---|
| Tara Penders       | MDOT SHA  |
| Scott Pomento      | MDOT SHA  |
| Yanira Rivera      | FHWA  |
| Tricia Sergeson    | FHWA  |
| Mike Sheffer       | MDOT SHA  |
| Teri Soos          | MDOT SHA  |
| Marshall Stevenson | MDOT SHA  |
| Rafey Subhani      | MDOT SHA  |
| Kate Sylvester     | MDOT SHA  |
| Sara Tomlinson     | Baltimore Metropolitan Council (BMC)                        |
| Bihui Xu           | Maryland Department of Planning (MDP)                       |
| Marisel Lopez      | FHWA Office of Project Development and Environmental Review |
| Scott Hara         | MDP   |
| Barbara Ruchicke   | EPA   |

# MDOT SHA Exchange: Planning and Environment Linkages (PEL)

## DRAFT PROCEEDINGS

### Appendix C – Additional Resources

#### CDOT:

- [CDOT webpage on TERC including PEL Partnering Agreement](#)<sup>12</sup>
- [CDOT PEL Program Webpage](#)<sup>13</sup>
- [State Highway 66 PEL - Existing Conditions Report/Environmental Scan](#)<sup>14</sup>
- [PEL Handbook](#)<sup>15</sup>

#### MDOT:

- [MD iMap](#)<sup>16</sup>

#### NCDOT:

- [NCDOT Linking LRTP and Project Development](#)<sup>17</sup>
- [Webpage on Process Improvement: Integration of Comprehensive Transportation Planning and Project Development Processes](#)<sup>18</sup>

#### FHWA:

- [Environmental Review Toolkit: PEL Website](#)<sup>19</sup> which includes additional resources and publications

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<sup>12</sup> <https://www.codot.gov/programs/environmental/transportation-environmental-resources-council-terc/terc-and-partnerships.html>

<sup>13</sup> <https://www.codot.gov/programs/environmental/planning-env-link-program>

<sup>14</sup> <https://drive.google.com/file/d/0B5mssZC3CAYYeEk1cm9VVWc5TzQ/view>

<sup>15</sup> <https://www.codot.gov/programs/environmental/planning-env-link-program/pel-handbook-january-2016>

<sup>16</sup> <http://imap.maryland.gov/Pages/default.aspx>

<sup>17</sup> <https://connect.ncdot.gov/projects/planning/Pages/Integration-Project.aspx>

<sup>18</sup> <https://www.ncdot.gov/programs/environment/development/improvement/integration.html>

<sup>19</sup> [https://www.environment.fhwa.dot.gov/env\\_initiatives/pel.aspx](https://www.environment.fhwa.dot.gov/env_initiatives/pel.aspx)

# MDOT SHA Exchange: Planning and Environment Linkages (PEL) DRAFT PROCEEDINGS

## Appendix D – Summary of Survey Results

**Question 1:** What is your experience with PEL approaches including PEL studies?

**Summarized responses:**

- Experience ranged from none to limited to tangential
- Some awareness of concept , FHWA training material, and literature
- Multiple references to the US 219 PEL Study
- Travel forecasting support on Capital Beltway
- Involved with PEL where no subsequent NEPA started
- Worked on projects that are similar, but not called PEL

**Question 2:** In what ways would your agency/organization be able to collaborate with MDOT SHA on future PEL related efforts?

**Summarized responses:**

- Understanding that PEL in “pre-NEPA” but not familiar with how agencies can be plugged in
- Trying to figure out the main objective – need a clear deliverable
- Involved early and at a high-level
- Make decisions in PEL, focus on issue pre-NEPA

**Question 3:** Are there any PEL report products that your agency/organization would find helpful?

**Summarized responses:**

- Unsure, unknown, not sure, not aware
- Alternatives analysis
- Environmental studies completed during PEL used in NEPA (i.e indirect/cumulative effects analysis?)
- Case studies, agreements, or guidance from other DOT’s
- General reports

**Question 4:** What challenges do you see for your agency/organization under PEL studies and approaches?

**Summarized responses:**

- Standardization of approaches used for various studies
- Obtaining agency buy-in/concurrence that can be carried into NEPA

## **MDOT SHA Exchange: Planning and Environment Linkages (PEL)**

### **DRAFT PROCEEDINGS**

- A commitment of time with no real product
- Understanding types of project that would warrant a PEL study – and the best time to perform the study
- FHWA regulations
- Lack of results that can occur with a PEL study
- Duplicating, or updating, information in NEPA
- Prioritizing PEL support of DOT work

**MDOT SHA Exchange: Planning and Environment Linkages (PEL)**  
**DRAFT PROCEEDINGS**

Appendix E – NCDOT’s Alternatives Evaluation Table

| CTP Alternatives Studied in Detail Evaluation Table <sup>1</sup> Local ID: XXXX####-# |                          |                          |                                  |                                  |  |  |  |     |     |                    |
|---|--------------------------|--------------------------|----------------------------------|----------------------------------|--|--|--|-----|-----|--------------------|
| Alternative (A/B/C)   | Meets Primary Purpose 1? | Meets Primary Purpose 2? | Meets Other Desirable Outcome 1? | Meets Other Desirable Outcome 2? | Unacceptable level of Natural Environmental Impacts <sup>2</sup> ? | Unacceptable level of Human Environmental Impacts <sup>2</sup> ? | Meets Community Vision and Goals/Objectives? |     |     | CTP/MTP Assessment |
|   |                          |                          |                                  |                                  |  |  | G#1  | G#2 | G#3 |                    |
| A   | Y                        | Y                        | Y                                | Y                                | N  | N  | Y  | N   |     | U                  |
| B   | Y                        | Y                        | Y                                | N                                | N  | N  | Y  | Y   | Y   | O                  |
| C   | N                        | Y                        | Not Studied Further              |                                  |  |  |  |     |     | U                  |
| D   | Y                        | Y                        | Y                                | Y                                | N  | N  | Y  | Y   | Y   | CTP/MTP            |
| E   | Y                        | Y                        | Y                                | N                                | N  | Y  | Not Studied Further                          |     |     | U                  |
| F   | Y                        | Y                        | N                                | N                                | N  | N  | Y  | Y   | Y   | O                  |

<sup>1</sup>Y= Yes. N=No. U= Unreasonable. CTP/MTP= CTP/MTP Project Proposal. O= Other Alternative Studied  
<sup>2</sup>Refer to the CTP Alternatives Full Impacts Table for details.

- U= Unreasonable from a long range planning perspective
- O= Other long range planning alternative studied
- CTP/ MTP project proposal