A Companion for the Federal Highway Administration Resource Center Training on Purpose & Need

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Rob Ayers, Environmental Protection Specialist
Federal Highway Administration's Resource Center
E-mail: rob.ayers@dot.gov
FHWA Resource Center website: http://www.fhwa.dot.gov/resourcecenter/

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Is this document relevant to me?

Why should I read this?

If you are responsible for writing a Purpose and Need Statement (P&N), this will help you craft a quality P&N. It will help you articulate:

- What are the problems I am trying to address?
- What performance do I want because of my project?
- How can I effectively communicate this information to readers of my environmental document?
- What documentation do I need to support my data, analysis and conclusions?

If you are responsible for reviewing a P&N, this will help you understand:

- Is it clear what problems exist?
- Is it clear what performance is desired because of the project?
- Does the documentation support the data, analysis and conclusions?

If you are responsible for providing information for a P&N, this will help you understand:

- How will my information be useful?
- How can I best provide my information?
- What documentation do I need to support the information I provide?

Who is "you" (for the rest of this document)?

For the rest of this document, unless otherwise noted, "you" refers to the person responsible for crafting a P&N. It typically will be someone at a state Department of Transportation.

What basic information do I need to know?

What is a Purpose & Need Statement?

The Purpose & Need Statement establishes **why** you are proposing a project.

It is one of the essential elements of the National Environmental Policy Act (NEPA) and it is the foundation for the rest of the NEPA process (see box to the right).

NEPA's essential elements include:
- Purpose & Need
- Range of alternatives
- Alternatives analysis
- Mitigation
- Public Involvement
- Agency Coordination
- Documentation

Additional Resources:
- National Environmental Policy Act: ceq.doe.gov/laws_and_executive_orders/the_nepa_statute.html

Where does "purpose and need" come from?

The Council on Environmental Quality regulations (40 Code of Federal Regulations 1502.13) state: "*The statement shall briefly specify the underlying **purpose and need** to which the agency is responding in proposing the alternatives including the proposed action*."

The Federal Highway Administration (FHWA) Technical Advisory T 6640.8A states: *"Identify and describe the proposed action and the transportation problem(s) or other needs which it is intended to address (40 Code of Federal Regulations 1502.13). This section should clearly demonstrate that a "need" exists and should define the "need" in terms understandable to the general public. This discussion should clearly describe the problems which the proposed action is to correct."*

Additional Resources:
- Council on Environmental Quality regulations: ceq.doe.gov/ceq_regulations/regulations.html
- FHWA Technical Advisory T 6640.8A: environment.fhwa.dot.gov/projdev/impta6640.asp

How can a Purpose & Need help?

If you are responsible for environmental documentation, a P&N can help you:
- Avoid developing an ill-conceived project;
- Develop a shared understanding of the transportation problems and desired performance as a result of the project;
- Define a project's scope;
- Develop and evaluate alternatives;
- Achieve environmental streamlining;
- Identify potential context sensitive solutions;
- Allow transportation decisions to be legally defensible;
- Justify impacts and spending of funds;

- Justify projects for programming; and
- Comply with other federal environmental laws.

If you are responsible for reviewing environmental documentation, the P&N can help you:

- Understand the transportation problems and desired performance as a result of the proposed project;
- Understand the project's scope; and
- Assist in developing and evaluating alternatives.

Additional Resources:

- FHWA elements of Purpose and Need: environment.fhwa.dot.gov/projdev/tdmelements.asp
- American Association of State Highway Transportation Officials Practitioner's Handbook "Defining the Purpose And Need And Determining The Range of Alternatives For Transportation Projects": environment.transportation.org/pdf/programs/PG07.pdf

What is a "Need"?

A "need" is an underperforming aspect of your transportation system. It is a problem to correct (see box to the right).

Example of a "need":
The bridge deck condition has a "poor" rating of 3 (on a scale of 0 to 9) based on the most recent inspection report. The state Department of Transportation desires all bridge decks be in a "good" condition—a rating of 7-9.

Additional Resources:

- FHWA elements of Purpose and Need: environment.fhwa.dot.gov/projdev/tdmelements.asp
- American Association of State Highway Transportation Officials Practitioner's Handbook "Defining the Purpose And Need And Determining The Range of Alternatives For Transportation Projects": environment.transportation.org/pdf/programs/PG07.pdf
- FHWA Performance Based Planning and Programming: http://www.fhwa.dot.gov/planning/performance_based_planning/

What is a "Purpose"?

A "purpose" identifies how you want your transportation facility to perform after implementing the project.

A "purpose" allows for a reasonable range of alternatives. Do not write it as a specific solution (see box to the right).

Good example of a "purpose":
The purpose is to achieve a bridge deck condition of 7 or better.

Poor example of a "purpose":
The purpose is to replace the bridge deck.

Additional Resources:

- FHWA elements of Purpose and Need: environment.fhwa.dot.gov/projdev/tdmelements.asp
- American Association of State Highway Transportation Officials Practitioner's Handbook "Defining the Purpose And Need And Determining The Range of Alternatives For Transportation Projects": environment.transportation.org/pdf/programs/PG07.pdf

Are all purposes equal?

Purposes are not always equal. You may have competing interests on your project. Funding constraints, timing and public input can influence how you define success for your project. If this happens, you may find it helpful to differentiate between the relative importance if you have multiple purposes:

- A **primary purpose** is essential to the success of your project. You should eliminate an alternative that does not achieve a primary purpose because it is unreasonable.
- A **secondary purpose** (also called "**other desirable outcome")** is desirable, but not essential to the success of your project. Think of it as an option. It is not a basis for eliminating an alternative based on meeting the purpose of the project. However, you may consider it as a factor in screening and selecting a preferred alternative.
- Other levels? You have the option to include more than two levels of importance.

There is no requirement for you to solve all of your needs with a single project. However, you must have at least one primary purpose and meet the needs of the primary purpose.

Additional Resources:

- FHWA elements of Purpose and Need: environment.fhwa.dot.gov/projdev/tdmelements.asp
- American Association of State Highway Transportation Officials Practitioner's Handbook "Defining the Purpose And Need And Determining The Range of Alternatives For Transportation Projects": environment.transportation.org/pdf/programs/PG07.pdf

Who develops Purpose & Need?

If you work for a federal agency with a decision subject to NEPA, your agency is ultimately responsible for the P&N.

The FHWA is subject to NEPA for the decision to fund a project through the Federal-Aid Highway Program. This program is a federally-assisted, but state-administered program. If you work for a state department of transportation or a local government receiving FHWA funding from your state Department of Transportation, you will be performing much of the actual work. The FHWA remains ultimately responsible.

The Stewardship & Oversight Agreement is between your FHWA Division and your state Department of Transportation. It explains how your state implements the Federal-Aid Highway Program.

The FHWA is also subject to NEPA for the decision to:

- implement a project through the Federal Lands Highway Program; and
- approve access changes to the Interstate System.

Other federal agencies are also subject to NEPA for various decisions. Some decisions you may encounter include:

- The US Army Corps of Engineers decision to approve fill or discharges to Waters of the United States under

If your state Department of Transportation has assumed FHWA's NEPA responsibilities under 23 US Code § 327 (only a few states have done so), then your state Department of Transportation is ultimately responsible for P&N—not FHWA.

Section 404 of the Clean Water Act;
- The US Coast Guard decision to approve bridge permits over navigable waters under Section 10 of the Rivers and Harbors Act;
- The US Forest Service, Bureau of Land Management and other federal land-holding agencies decision to transfer federal property rights; or
- The US Fish & Wildlife Service decision to issue a compatibility determination on a National Wildlife Refuge.

Additional Resources:
- National Environmental Policy Act: ceq.doe.gov/laws_and_executive_orders/the_nepa_statute.html
- Council on Environmental Quality regulations: ceq.doe.gov/ceq_regulations/regulations.html
- Council on Environmental Quality Exchange of Letters with Secretary of Transportation: Purpose and Need:
  - Part 1: ceq.doe.gov/nepa/regs/CEQPurpose.pdf
  - Part 2: ceq.doe.gov/nepa/regs/CEQPurpose2.pdf
- FHWA/ Federal Transit AdministrationJoint Guidance on Purpose & Need: environment.fhwa.dot.gov/guidebook/Gjoint.asp
- Stewardship & Oversight Agreements: http://www.fhwa.dot.gov/federalaid/stewardship/

What happens when multiple federal agencies have NEPA decisions?

It depends. Each Federal agency has an independent responsibility to comply with NEPA for a transportation project. For example:
- If two or more federal agencies combine their NEPA responsibilities, these "joint lead" agencies are jointly responsible for the P&N and must agree on the P&N. If the joint lead agencies cannot agree, the process does not move forward until the disagreement is resolved.
- If two or more federal agencies independently perform their NEPA responsibilities, each federal agency will develop their P&N. Because these other Federal agencies have an independent responsibility to comply with NEPA, they are not required to adopt the P&N as defined by the transportation agencies.

Additional Resources:
- 23 U.S.C. § 139 (Efficient environmental reviews for project decisionmaking): gpo.gov/fdsys/granule/USCODE-2011-title23/USCODE-2011-title23-chap1-sec139
- Draft FHWA/ Federal Transit Administration Revised Environmental Review Process Guidance: fhwa.dot.gov/map21/guidance/12mar_prop_env_proc_review_pc.cfm

How & when are the public and agencies involved?

You can benefit from involving the public, federal, and state agencies as you develop your P&N.

The public can inform you of problems with the transportation system that you otherwise might not know about. The public can also help you decide what level of performance is acceptable to the community.

Coordination with federal and state agencies can help these agencies understand why you are proposing your project. Particularly for those federal agencies with their own NEPA decisions to make on your project, you should involve them so when they develop their own P&N for your project, it is consistent (hopefully) with the one you are developing.

If you are preparing an Environmental Impact Statement, 23 US Code § 139 requires an "*opportunity for involvement*" for agencies and the public in defining the purpose and need. You have flexibility in determining how to provide this opportunity, but you must provide the opportunity prior to the lead agencies' final articulation of the P&N.

23 Code of Federal Regulations 771.111(h)(1) requires your state Department of Transportation to have an approved Public Involvement Plan.

If you are preparing an Environmental Assessment or a Categorical Exclusion, your state Public Involvement Plan may provide information on how you involve the public and agencies in developing your P&N.

Additional Resources:

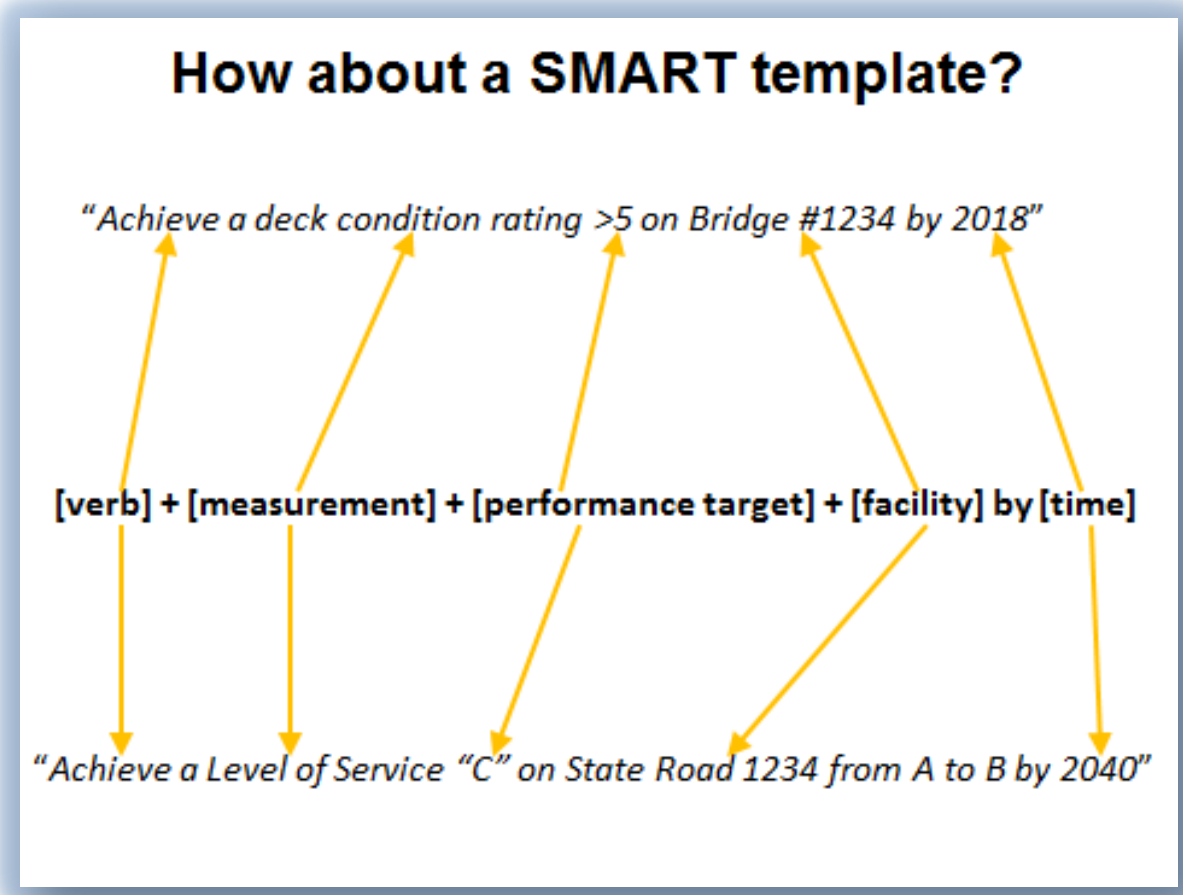
- Council on Environmental Quality Exchange of Letters with Secretary of Transportation: Purpose and Need:
  - Part 1: ceq.doe.gov/nepa/regs/CEQPurpose.pdf
  - Part 2: ceq.doe.gov/nepa/regs/CEQPurpose2.pdf
- FHWA/ Federal Transit Administration Joint Guidance on Purpose & Need: environment.fhwa.dot.gov/guidebook/Gjoint.asp
- 23 U.S.C. § 139 (Efficient environmental reviews for project decisionmaking): gpo.gov/fdsys/granule/USCODE-2011-title23/USCODE-2011-title23-chap1-sec139
- Draft FHWA/ Federal Transit Administration Revised Environmental Review Process Guidance: fhwa.dot.gov/map21/guidance/12mar_prop_env_proc_review_pc.cfm
- 23 Code of Federal Regulations 771.111(h)(1) (Public Involvement Plan requirement): ecfr.gov/cgi-bin/text-idx?tpl=/ecfrbrowse/Title23/23cfr771_main_02.tpl

Should I "get smart" with my purpose(s)?

Absolutely. A Specific, Measurable, Agreed-upon, Realistic and Time-bound purpose facilitates your ability to determine whether an alternative meets your purpose.

- **How can being Specific help?** A specific purpose is clear and unambiguous.
- **How can being Measurable help?** A measurable purpose helps you determine if an alternative meets the purpose of your project.
- **How can being Agreed-upon help?** You are more likely to reach a decision on your project if the public and agencies agree with your P&N.
- **How can being Realistic help?** A purpose is most useful when it considers external constraints (such as funding or community preferences).
- **How can being Time-bound help?** If you know when you want to achieve success, include a date.

The template below shows what a SMART purpose looks like.



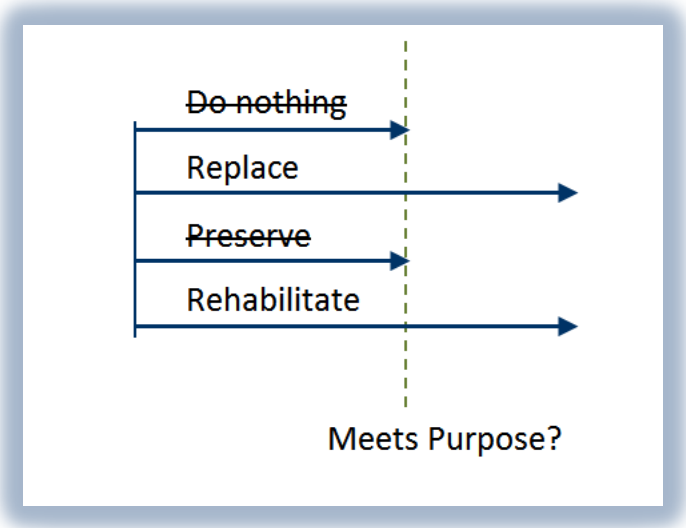
- The "*verb*" describes the desired direction (up/down) of the measure of effectiveness.
- The "*measure of effectiveness*" ("measurement" in the graphic) describes what metric tracks progress towards the performance target.
- The "*performance target*" describes your desired level of performance (based on the measure of effectiveness).
- The "*transportation facility*" describes what type(s) of modal facility has the problem.
- The "time" describes when you desire success.

SMART objectives: smart-goals-guide.com/smart-goal.html

How do I use Purpose & Need for my alternatives analysis?

Your P&N is a key factor in determining a reasonable range of alternatives. This is important because you can (and should) eliminate an alternative from further consideration if it does not meet the purpose(s) of your project.

In the graphic to the right, assume a bridge has a deck condition below the desirable level. Four alternatives are considered. Analysis indicates two of the four alternatives (the "do-nothing" and the "preserve") do not meet the purpose of the project. Thus you eliminate these two alternatives.



Additional Resources:

- FHWA elements of Purpose and Need: www.environment.fhwa.dot.gov/projdev/tdmelements.asp
- American Association of State Highway Transportation Officials Practitioner's Handbook "Defining the Purpose And Need And Determining The Range of Alternatives For Transportation Projects": environment.transportation.org/pdf/programs/PG07.pdf

How do I decide whether an alternative meets multiple purposes?

If you have multiple, primary purposes, you should eliminate an alternative that clearly fails to meet even one primary purpose.

Which alternative(s) meet the purpose?

	PP #1	PP #2	ODO #1	ODO #2
Alt 1	N	Y	Y	N
Alt 2	Y	Y	N	Y
Alt 3	Y	Y	N	N
Alt 4	Y	N	Y	Y

If you have an alternative that satisfies your primary purpose(s) but fails to satisfy some or all of your "other desirable outcomes", the alternative is still reasonable and thus carried forward for further consideration.

The graphic to the left illustrates four alternatives assessed against two primary purposes and two "other desirable outcomes".

Look at each of the four alternatives and decide whether the alternative meets the purpose of the project or not. The answers are contained in the text box below.

Answer: Alternatives 2 & 3 meet both primary purposes and therefore meet the overall purpose of the project. Alternatives 1 & 4 do not meet both of the primary purposes. You should eliminate them.

When does Purpose & Need start?

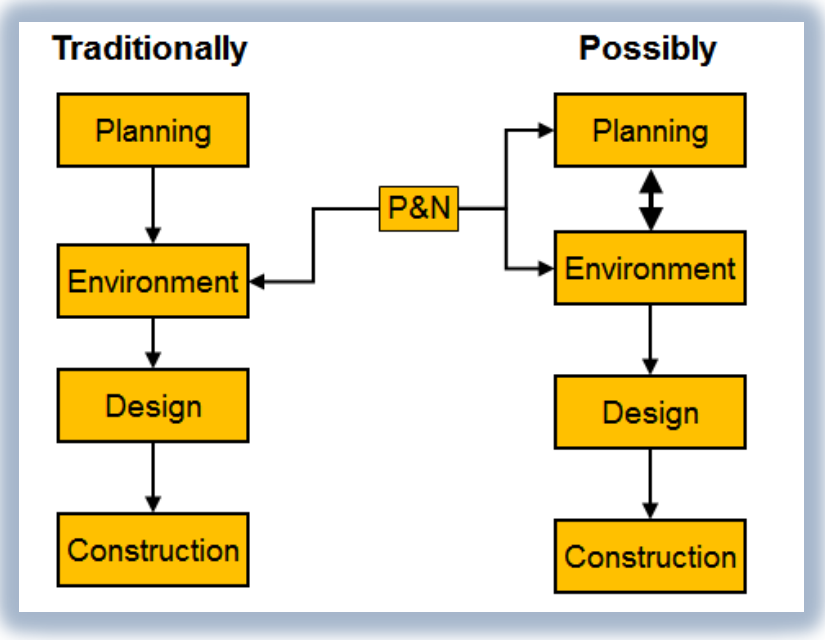
If you are responsible for a P&N, you occasionally get a new project dropped on your desk. There is likely some basic information, including a project description from the Transportation Improvement Program.

Traditionally, you may have started developing P&N during the NEPA phase of your project. However, if you think about it, by the time NEPA starts, something back in Planning or Asset Management (in areas such as bridge, pavement, safety, drainage) resulted in some sort of problem identification, analysis and a recommended solution that eventually got into the Transportation Improvement Program. Funding became available and now here you are.

You do not want to search for needs and purposes that will allow you to implement the project described in the Transportation Improvement Program —this is backwards. Rather, you must understand how the project concept originated and what decision-making process occurred back in Planning or Asset Management that led to this project getting on your desk.

A streamlining technique is the concept of Linking Planning & NEPA. This means the Planners, Asset Managers and other pre-NEPA disciplines can be collecting data and performing analysis that should be forming the basis for your P&N.

The graphic to the right illustrates this shift in thinking.

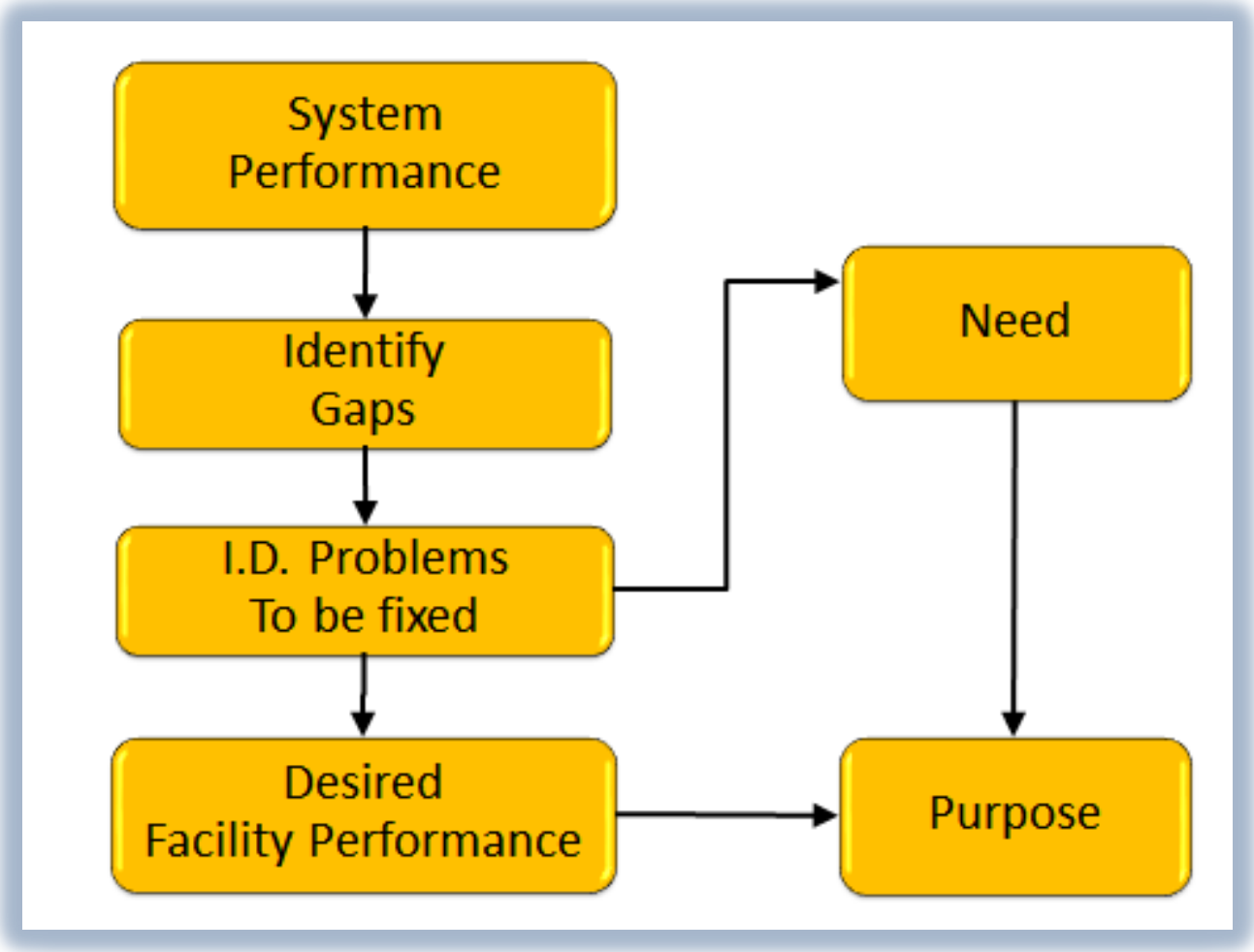


Additional Resources:

- FHWA Planning & Environment Linkages: www.environment.fhwa.dot.gov/integ/index.asp
- FHWA Resource Center training on Planning & Environment Linkages.

So how do I put it all together?

The graphic below illustrates a process for you to craft a P&N.



What is system performance?

You should first understand how the transportation system should perform. Through the Planning and Asset Management processes, Visions, Goals, Objectives, Policies, Performance Measures, or Measures of Effectiveness may describe how the system should perform. This is where you first look to understand how your community or your agency wants the transportation system to perform.

> There is a saying "*if you don't know where you're going, how will you know when you get there*?" Without a clear understanding of desired performance, it is more difficult for you to demonstrate there is a deficiency.

For example:

- Your community may want roadways to operate at a certain speed.
- Your community may want to decrease transit headways.
- Your state Department of Transportation may have a definition for when a bridge becomes "poor".
- Your state Department of Transportation may have a desired pavement condition rating.
- Your community may want to increase multi-modal transportation.

How do I do this?

This step is purely an investigation on your part. For your project, your role is not to determine overall system performance—you just want to find out if system performance goals and targets already exist.

> Even if you cannot find information on system performance, make sure you document your negative findings as well.

If you find a source for desired system performance, make sure you document the source(s) for the system performance. You will be using that information to help determine potential needs for your project as well as help determine the performance (purpose) for your project.

A Running Example

Assume you have a bridge project and your Transportation Improvement Program describes it as a "*replace Bridge #1*". You first want to find out if your state Department of Transportation has anything that expresses how bridges should be performing. You find out your state Department of Transportation uses "condition rating" for bridges:

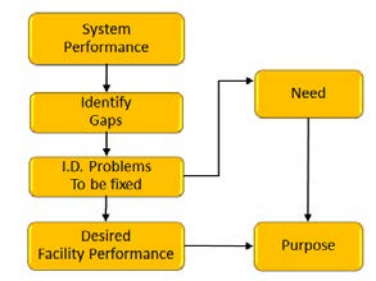
- A rating of 7-9 is a "good" condition
- A rating of 4-6 is a "fair" condition
- A rating of 0-3 is a "poor" condition

You also learn your state Department of Transportation has a performance dashboard metric of "*100% of bridge decks have a "good" condition rating*." Therefore, the desired system performance is all bridge decks will have a "good" condition.

Remember, you are not making the decision on what the overall system performance should be. You are simply trying to understand what system performance has already been established.

What is "identify gaps"?

This is the step where you compare current and future transportation performance (such as travel speed, transit ridership, critical crash rates, and pavement condition) with the desired system performance (previous step).



If you have a transportation facility that is not performing at the desired level, this gap in the performance becomes the basis for your project "need".

How do I do this?

From the information coming out of the Planning or Asset Management process, you already should have a good idea of what problems are driving the project. You still need to either confirm any previous gap analysis or you will have to perform your own gap analysis.

The methodology and tools for gap analysis may be influenced by what information, tools, and expertise you have at your disposal. For example:

- If your Transportation Improvement Program project is a "bridge replacement", you should obtain previous bridge inspection reports. These should contain enough information to demonstrate a deficient bridge condition.
- If your Transportation Improvement Program project is a "new location" or "widening", you may be using a travel demand model or a speed study or some other tool to predict the roadway operating conditions.
- If your Transportation Improvement Program project is a "safety project", you will either need your traffic safety engineers to determine if there is a crash problem, or you will need to discuss why exposure is unacceptable.

The important thing for you is to reach back into Planning/Asset Management to understand what tools and methodologies were used to identify the deficiency. This way, it is easier and quicker for you to confirm a problem, rather than forcing you to search for a problem that fits with your project description.

If you cannot demonstrate a problem, it makes it very difficult to justify the expenditure of public funds and incurring any negative impacts from your proposed project.

A Running Example

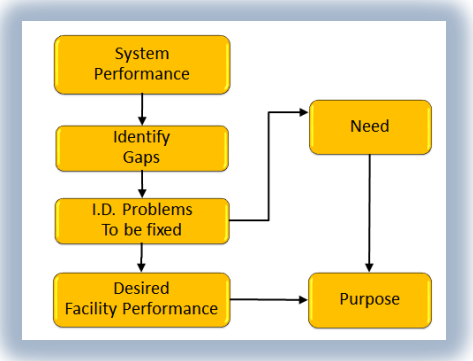
You talk with your state bridge maintenance unit. You find out they inspect bridges every other year. You obtain the most recent bridge inspection report for Bridge #1 and it indicates a "poor" deck condition (with a rating of 3).

Since the condition rating is less than the "good" (rating of 7-9) desired performance level, you confirm there is a deficiency.

Note: this is a good example of linking Planning and NEPA.

What is "I.D. problems to be fixed"?

Now you must decide which problems (from the previous step) you intend to address. Often, there can be multiple problems associated with your project. It is tempting to want to solve all of your problems at the same time but there may be limitations. For example:



- Funding eligibility—you may be using a funding program that limits what activities are eligible. If you cannot incorporate multiple funding sources, you might not be able to solve all of your problems using just a single funding program.
- Funding amount—you may not have enough funding to solve all of your problems with a single project.
- Timing—you may have a critical problem requiring immediate action. If solving other problems delays the immediate action, then programming multiple projects may be necessary.
- Public feedback—maybe the community does not want a particular problem solved.

This step becomes the basis for your project's "needs" in NEPA.

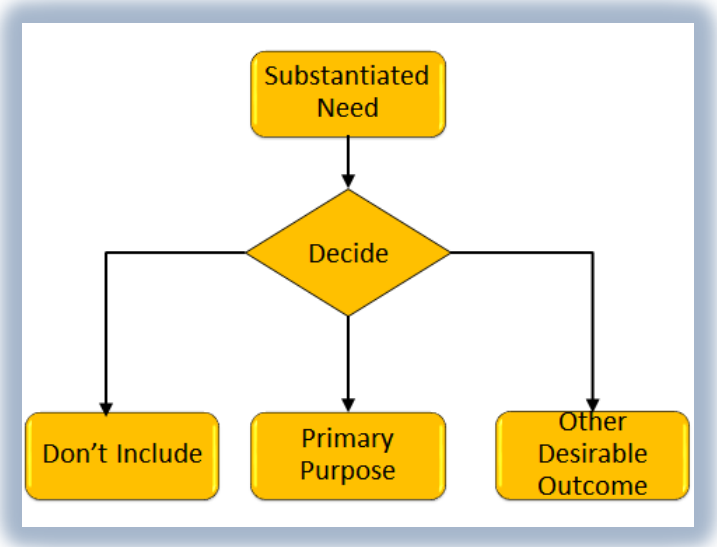
NEPA does not require you to solve all of your problems with a single project. It is up to you whether you want to solve one problem or multiple problems with your project.

How do I do this?

A good scoping process can help you decide which problems you want to solve as part of your project. Public engagement is helpful—particularly stakeholders whose problems you are considering not trying to solve. Agency coordination can also help you understand how long it might take to implement your project. Ultimately, it is up to you to decide (and document) which problems to solve with your project.

First, make sure you have a well-documented and well-substantiated need. Then, for each of your needs, you have three choices (see the graphic to the right):

- Include as a primary purpose;
- Include as an "other desirable outcome"; or
- Do not include.



Your Running Example

Through scoping, along with your original problem of a deficient bridge deck, you discover two additional problems:

- Many residents walk over the bridge to the local park. The bridge does not have a pedestrian facility (the bridge rail is 2 feet from the edge of the travel lane). In addition, the community's transportation plan has a goal to "*accommodate pedestrians on all roads in the downtown area*".
- Your traffic safety team also informs you that there is a problem with crashes under wet conditions on the bridge.

Although you started out with one problem, you now have three problems to consider addressing on your project:

- A deficient bridge deck;
- Deficient pedestrian facilities; and
- A crash problem.

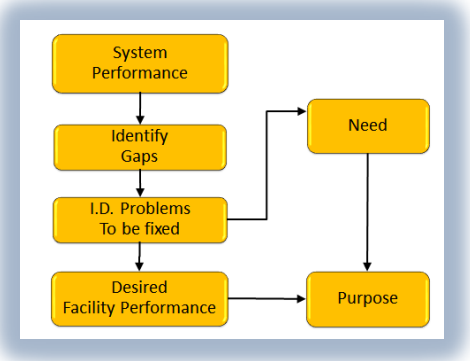
You now must decide which problems you want to address as you craft the purpose of your project.

For the pedestrian need, you think you might be able to widen the deck but you are not sure whether you will have enough funds. Therefore, you decide not to have a primary purpose related to pedestrian accommodations. Instead, you state it as an "other desirable outcome". This shows that you will try to solve that problem, but if you cannot, then you still proceed with the project.

For the crash problem, your safety team has discovered the pavement on the bridge deck is too slick and it is causing crashes under wet conditions. Since you will be addressing the bridge deck condition, you believe you can provide a rougher pavement surface to address the slick conditions. Therefore, you decide to include another primary purpose related to the crash problem.

What is "desired facility performance"?

This is where you decide how well you want to address the problems identified from the previous step. You have already identified your desired performance from a system perspective (first step). You have performed analysis to confirm problems exist (second step). You have decided which problems you intend to address (third step). Now it is time to decide what level of performance you want to achieve because of your project.



This step becomes the foundation of your project "purpose".

How do I do this?

You start with the desired overall system performance level.

Next, you determine whether the overall system performance level is appropriate for your project. There can be good reasons why the overall desired system performance is not appropriate for a specific transportation facility.

- Talk with stakeholders to determine support or concerns with using the overall system performance as your facility's specific performance level;
- Get a sense as to whether enough funding can be available to achieve the overall system performance level; and
- Get a sense as to whether (if you have multiple needs you are solving) there are any conflicts between the overall system performance levels (see box to the right).

> Sometimes there are competing interests that influence how you identify desired performance for a particular facility. You might want certain minimum speeds for your arterials, but if an arterial runs through your charming downtown district, you might accept a lesser speed performance if it means reducing potential relocation impacts to the businesses or reducing the severity of crashes between vehicles and pedestrians.

Finally, you decide on a desired level of performance for each of the purposes you will be addressing with your project.

- If you are sticking with the overall system performance target, make sure you document the source as well as how you made the decision to stick with that performance level.
- If you are setting a performance level that differs from the overall system performance level—it is OK—but make sure you can explain and document why you chose a different performance level for your project.

Your Running Example

From the previous step, your two primary purposes are to address the bridge deck and crashes under wet conditions.

For the bridge deck condition, since your state Department of Transportation wants bridge decks to be in a “good” condition, you choose the desired system performance as the performance level for your project.

For the wet crash problem, your safety team tells you that providing a better pavement friction may reduce this type of crash by 30%.

From this, you craft the following purpose statement:
“The purpose is to:

- ***Achieve a “good” deck condition rating (at least a rating of 7); and***
- ***Reduce wet crashes on the bridge by 30%.”***

You also choose to try to address the pedestrian problem by adding the following:
“Other desirable outcomes” include:

- ***Provide a pedestrian facility across the river”.***

What issues might I encounter when crafting a P&N?

Some of the issues you might encounter on a transportation project include:

- Congestion;
- Safety;
- Access;
- System Linkage;
- Mobility;
- Emergency Evacuation; and
- Other Facility Deficiencies;

You may encounter other issues that influence transportation decisions. For all of these, make sure you frame the issue from a transportation perspective:

- Legislative Intent;
- Environmental Protection;
- Economic Development; and
- National Defense/Security.

Note: The two lists above are not all-inclusive.

Do not get too concerned about the titles of these needs. Some may overlap (for example congestion and mobility have some common traits) or you may use different terminology (land use instead of economic development). This is OK. Use whatever terms are common for your area. It is more important that you can accurately describe the problems with your transportation facility.

Congestion in Purpose and Need

Congestion is a frequent issue for transportation projects. It should be easy to identify support for reducing congestion from policy statements--the FHWA, State Department of Transportation, Metropolitan Planning Organization and local communities typically have goals/objectives to reduce congestion.

When considering congestion as a project purpose, **make sure you can define congestion**. You can define congestion by using a measurement (such as travel speed, travel time, level of service) along with a threshold of when the level becomes undesirable (such as a level of service F).

> The Transportation Research Board defines congestion as "*Travel time in excess of that normally incurred under light or free-flow conditions*".

Once you have defined congestion (including what metric you will use to evaluate performance), your next step is to determine what performance level is desired for your facility. There are three options for you to consider:

- Set a performance level consistent with a planning effort. For example, Norfolk, Virginia's Metropolitan Transportation Plan, called "plaNorfolk2030" has "*Action T1.1.1. Monitor levels-of-service and strive for Level of Service of E or better on all roadway segments at peak times and prioritize improvements on those roads that are rated Level of Service F.*" If your project was in this area, then you may choose to rely on that planning effort to set a performance target of Level of Service E or better at peak times.
- Set a performance level that is different from a general performance level found in a plan. Consider the same Norfolk, VA plan. What if you had severe right-of-way constraints and achieving Level of Service E or better would require an unacceptable level of cost or impact? In this case, maybe your performance level is simply "maintain the existing Level of Service".
- Do not set a specific performance level. Just leave your purpose open-ended with something like "reduce congestion".

Setting a performance target v. not:
In the three examples to the left, the first two included specific performance targets (Level of Service D, maintain existing Level of Service) while the third suggests an undefined level of improvement. Is one better than the other?

Establishing a specific performance target:
Pro: When you evaluate alternatives, you will be able to eliminate alternatives that do not meet the minimum level of performance.
Con: You may find you do not like any of the alternatives that meet the purpose. If this happens, you may need to revise your performance target.

Establishing an open-ended performance target:
Pro: You will be able to evaluate alternatives based on various factors (including P&N) and
Con: you may not be able to eliminate alternatives based on not meeting the purpose of the project.

Additional Resources:

- FHWA elements of Purpose and Need: www.environment.fhwa.dot.gov/projdev/tdmelements.asp
- FHWA Performance Based Planning and Programming: http://www.fhwa.dot.gov/planning/performance_based_planning/

Safety in Purpose and Need

Incorporating safety into your P&N can be tricky. Transportation projects often produce safety benefits, but a potential safety benefit does not necessarily mean a safety problem exists. In addition, modifications to a transportation facility, while increasing one aspect of safety, can also result in an unintended worsening of another aspect of safety (see box to the right).

Examples of unintended consequences:

Controlling access (e.g. eliminating driveways/median access) can be effective in reducing angle/rear-end crashes. However, by controlling access, it is likely that speeds on the mainline will increase due to fewer vehicular conflicts. While the number of crashes may decrease, the severity of the crashes may increase due to crashes occurring at higher speeds.

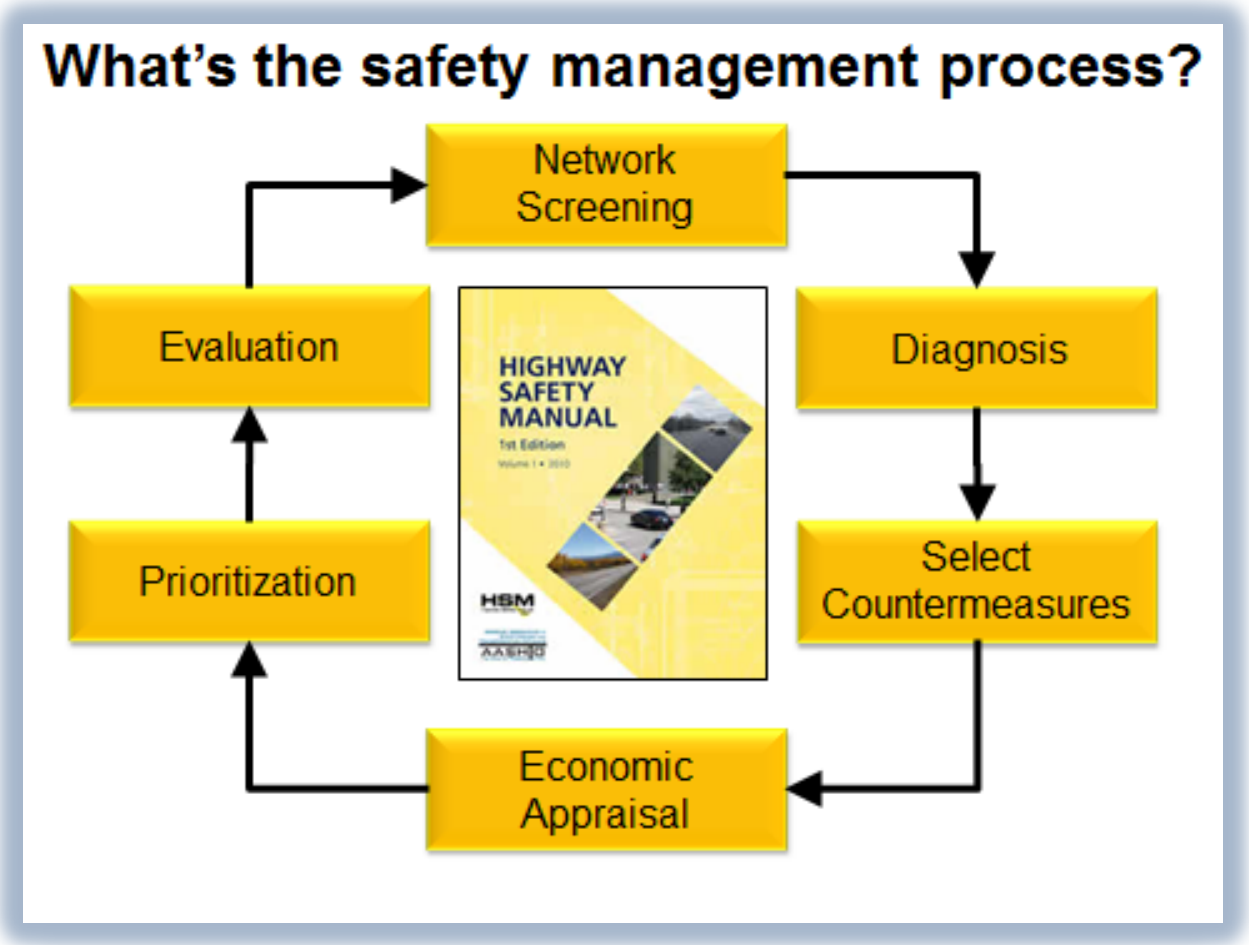
Installing a guardrail will likely help reduce run-off-the-road crashes, but it also introduces a fixed object that could be hit.

There are two approaches to considering safety into your Purpose & Need:

- Address an existing crash problem; and
- Address a potential crash problem.

How do I address an existing crash problem?

The American Association of State Highway Transportation Officials' Highway Safety Manual, First Edition identifies a six step process (see figure below) for identifying crash problems.



Network screening is the first step. It tells you whether you **MAY** have a crash problem. Often it is simply comparing the crash rate of a particular road or intersection with the crash rate from similar statewide facilities. **This is not enough to verify a safety problem.** If this is the only information you have at the time, unless you are willing to perform the diagnosis step, do not include safety in your P&N based on this level of information.

Network screening is typically the extent of analysis performed during the planning process.

The next step, diagnosis, is where you identify a crash problem. Diagnosis uses better measurements (such as the critical crash rate), assesses types of crashes (such as rear-end crashes) and operating conditions (such as wet or night conditions). Only the diagnostic analysis will confirm whether a crash problem exists or not.

Your traffic safety engineers will typically perform the diagnostic step.

If the diagnosis step does not indicate a crash problem, then do not use crash data to justify a perceived crash problem.

So rather than stating a need as "high crashes", the diagnosis step will allow you to better articulate the real problem (such as "run-off-the-road crashes under wet conditions".

If the diagnosis step indicates a crash problem, the "select countermeasures" step will help you decide how much of the safety problem can be reasonably addressed as your purpose. Although this step is what you will be doing as part of your alternatives analysis, it can help you get a sense of the range of possible crash reductions.

A "countermeasure" is something you might implement to reduce a specific type of crash. For example, installing a guardrail is a countermeasure for run-off-the-road crashes.

Each countermeasure has an associated crash reduction factor. This is the percentage crash reduction that might be expected after implementing a given countermeasure at a specific site. For example, the installation of centerline rumble strips on a two-lane roadway can expect a 14% reduction in all crashes and a 55% percent reduction in head-on crashes.

For example, if a particular countermeasure is expected to reduce the number of crashes by 23% (i.e., the crash reduction factor is 23), the crash modification factor will be 1 - (23/100) = 0.77. On the other hand, if the treatment is expected to increase the number of crashes by 23% (i.e., the crash reduction factor is -23), the crash modification factor will be = 1 - (-23/100) = 1.23.

Expected countermeasure effectiveness is also commonly expressed as a crash modification factor. This is a a multiplicative factor used to compute the expected number of crashes after implementing a given countermeasure at a specific site.

How do I address a potential crash problem?
Even if you do not have data to support a crash problem, it is perfectly fine if you want to reduce the potential conflicts between segments of the transportation population.

"Exposure" is the term used to describe potential conflicts between vehicles and modes. A pedestrian (walking on the shoulder of the road) is exposed to each vehicle traveling along that road.

To quantify the exposure, you simply multiply the number of one segment by the other to get at the rate of exposure. Using pedestrians and motor vehicles as the example, if you have 100 pedestrians per day and 1,000 vehicles per day, 100 x 1,000 = and exposure rate of 100,000 per day.

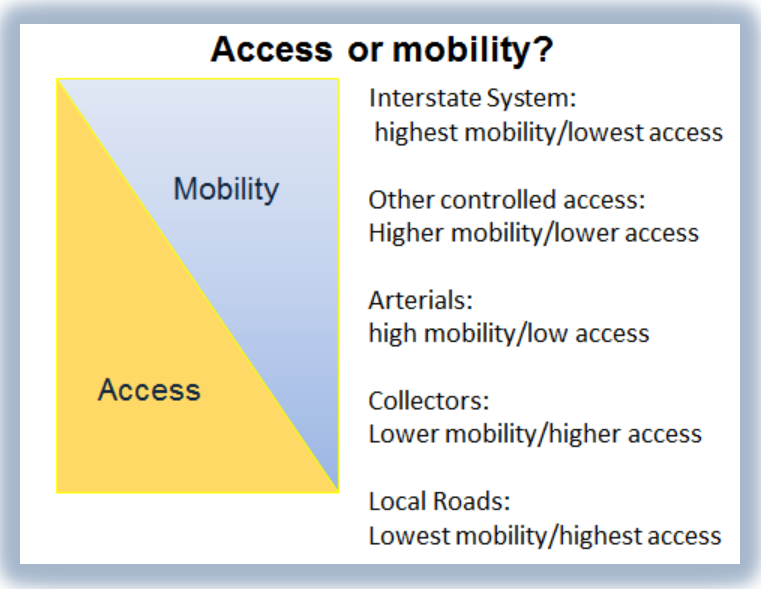
The only part left is to decide how much of that exposure you want to reduce. Maybe you want to eliminate the exposure or maybe you want to reduce it by a certain number or percentage. The effectiveness of countermeasures can help you understand the range of effective techniques. In the case of pedestrians walking along the roadway, the crash reduction factor for installing a sidewalk suggests an 88% reduction in pedestrian/vehicle crashes whereas the crash reduction factor for providing a 4-foot (minimum) paved shoulder suggests a 71% reduction.

Final Tips:
- Consult with your traffic safety engineers.
- Complete your safety investigation as the Highway Safety Manual suggests.
- Don't include safety in your P&N just because it "sounds good".
- Don't include safety in your P&N to increase justification for the project.
- Don't forget to consider unintended negative safety consequences.

Additional Resources:
- FHWA Roadway Safety Data Program: http://safety.fhwa.dot.gov/rsdp/hsm.aspx
- FHWA elements of Purpose and Need: www.environment.fhwa.dot.gov/projdev/tdmelements.asp

Access in Purpose and Need

Some types of roads are intended more to provide access while other roads are intended to facilitate mobility. The graphic to the right illustrates this relationship.



Be cautious about using access as a primary purpose. Usually, there is another underlying problem (for example congestion on nearby roads) and access modifications might be a solution instead of a problem.

If your project is on the Interstate System:
The operation and safety of the Interstate system is paramount. New access points or modifications to existing access points will not improve the operation and safety of the Interstate. If your project is on the Interstate, **do not propose access as a purpose in the P&N** (either as a primary purpose or as an "other desirable outcome").

If your project is not on the Interstate System:
Before considering access in the P&N, you should determine whether access (or lack thereof) is the root cause of the problem. Sometimes access might be appropriate (maybe there is an area that currently does not have any transportation access). Other times, you may find congestion or travel time or sub-standard roadway geometry is driving the transportation need and improving access is a solution (instead of the underlying problem).

When considering use of access in P&N, careful consideration of different aspects of access is necessary to understand the implications (both positive and negative) of "improving" [changing] access. See the box to the right.

"Improving" Access or Not?
Assume a two-lane undivided road. A four-lane divided facility is proposed. The rationale has typically been "we're improving travel conditions, it's easier to get to businesses and homes, and therefore access is improved". True, but…providing a divided facility restricts left turns to properties along the road.

If an alternative improves access for some of the users but also restricts access for other users, is the alternative really improving access?

Additional Resources:
- FHWA Highway Functional Classification Concepts, Criteria and Procedures (2013): fhwa.dot.gov/planning/processes/statewide/related/highway_functional_classifications/fcauab.pdf
- Intent of the Interstate System: fhwa.dot.gov/infrastructure/originalintent.cfm

System Linkage in Purpose and Need

System linkage can be a valid problem for you to solve.

Before you consider system linkage as a need, make sure there is not a different, underlying problem and system linkage might be a solution instead of a problem.

These examples should help you determine whether you should use system linkage in your P&N:

Example:
A community wanted a new interchange on the Interstate system. They identified the need as "system linkage". The actual problem was poor signal timing & roadway capacity at the existing interchange. Once the real problem was determined, they revised the purpose to address improving the signal timing and capacity. The system linkage idea (in the form of a new interchange) became an alternative—but not the purpose—for the project.

- **Linking two or more modal facilities (such as an intermodal facility).** If there is no way to get from one mode to another, then system linkage is probably the underlying problem. Think about a rail station in one part of a community and a bus station far enough away that walking is unreasonable. It probably makes sense to want to link these two modes at a single location so users can easily switch modes.
- **Linking an existing transportation facility/network to an area that currently does not connect to the facility/network**. If an area does not have any type of transportation services, then establishing a link makes sense. However, another way of looking at this is from the perspective of providing access. It is up to you to decide whether to describe your project's need from an access or a system linkage perspective.
- **Linking two or more existing transportation facilities (such as providing a new road)**. This is one where you should probably look for an underlying need other than system linkage. If you think about it, existing roads are already linked. There may not be an efficient way to get from one road to the other but it is possible. You could probably strive to "*improve system linkage*" but if there is another problem driving the perception of a linkage problem (such as undesirable travel times), you should consider articulating the problem a different way.

Additional Resources:
- FHWA elements of Purpose and Need: www.environment.fhwa.dot.gov/projdev/tdmelements.asp

Mobility in Purpose and Need

Mobility frequently appears in the planning process as a goal for transportation. If you encounter a mobility need, make sure you understand how the community defined and assessed mobility during the planning process.

Examples from actual Metropolitan Transportation Plans:

"Goal—*Support efforts to improve mobility for Urban Area residents*". Objective—*Support any expansion plans [for local transit] that will improve mobility for the general public…".*

Goal: "*Ensure maximum regional mobility through improvements to and maintenance of the road and highway network*"

Once you have defined mobility for your P&N, you then should identify one or more metrics for evaluating the mobility performance. Often, metrics used for other needs addressed in this document can also assess mobility. Take congestion for example. Metrics such as travel times or level of service or volume-to-capacity ratios can serve as indicators for mobility. Other mobility-related performance metrics might relate to mode choice.

Example from an actual Metropolitan Transportation Plan:

Goal: "*Maintain and enhance mobility and access of goods and people within the region.*"

The performance measures used to evaluate mobility for this Metropolitan Transportation Plan were: vehicle miles traveled (congestion), hours of delay (congestion), type and extent of transit providers, bicycle facility presence & type, pedestrian facility presence & type, rail system presence & type and finally airport presence & type.

Additional Resources:

- FHWA elements of Purpose and Need: www.environment.fhwa.dot.gov/projdev/tdmelements.asp
- FHWA Performance Based Planning and Programming: http://www.fhwa.dot.gov/planning/performance_based_planning/

Emergency Evacuation in Purpose and Need

Emergency evacuation is best suited when there is an event that can be somewhat planned for. Hurricane evacuation or nuclear plant evacuation are typical examples.

Look for an adopted emergency evacuation plan. It will help you understand how transportation fits into the plan. Make sure your facility is a component of the evacuation plan (such as a designated evacuation route). The plan may also specify a desired level of performance, such as evacuate people within a certain timeframe.

If you are considering how to solve an emergency evacuation problem, make sure you understand all of the components of successful evacuation. Certainly there's a transportation component, but often there are other needs for successful evacuation that are beyond the scope of what transportation agencies can do. Some of these include law enforcement assistance, shelter, and places to stop for fuel.

North Carolina has hurricane evacuation standards in their General Statutes (GS 132-102.7) "*The hurricane evacuation standard to be used for any bridge or highway construction project pursuant to this Chapter shall be no more than 18 hours, as recommended by the State Emergency Management officials*."

If successful evacuation includes components that are outside of your control, you should craft your purpose to only address the transportation-related components of evacuation.

Other Facility Deficiencies in Purpose and Need

"Facility deficiencies" are physical characteristics of a facility that are below the desired performance. Examples might include:

- Substandard geometrics;
- Load limits on structures;
- Cracked pavement; and
- Uneven sidewalks.

Congestion, safety and the other issues identified in this document are all some type of "facility deficiency". This discussion of "other facility deficiencies" is a sort of catchall.

You will likely find the desired performance and analysis identifying the need in one or more of these Departments of Transportation (or local government) planning/asset management efforts:

- Pavement Management System;
- Bridge Management System;
- Maintenance Management System;
- Roadway Design Manuals and Guidelines; and
- Structure Standards.

(From a state Department of Transportation): A good condition is defined as a Pavement Condition Rating value of 80 or higher (on a 0 to 100 scale).

Using a bridge as an example, most states strive for the bridge deck, super-structure and sub-structure to be in a "good" condition (a 7-9 on a scale of 0-9). Bridges are typically inspected every two years and so by the time you're working on a P&N, you've likely got all of the necessary information to document a problem (the condition rating from the most recent inspection report) and the desired performance (condition = good). Therefore, your purpose could be any of these:

- "*Achieve a "good" condition on the deck, super-structure and sub-structure*"; or
- "*Achieve a condition rating of at least 7";* or
- *"Achieve a condition rating of 8 (or 9)"*.

Sometimes your purpose may just be to maintain the current condition. That is OK.

What if an existing road is added to the Interstate system? In this case, assume the road does not meet some of the design criteria as an Interstate. Maybe the access is not controlled or the design speed is not consistent with Interstate standards. In this case, your need would be something like "*the road does not meet access and speed criteria for an Interstate designation*" and your purpose might be expressed as "*bring the road up to current Interstate design criteria*".

This example also applies to any type of facility that changes functional classification or gets some other type of designation with accompanying design criteria.

Additional Resources:

- FHWA elements of Purpose and Need: www.environment.fhwa.dot.gov/projdev/tdmelements.asp
- FHWA Performance Based Planning and Programming: http://www.fhwa.dot.gov/planning/performance_based_planning/

Legislative Intent in Purpose and Need

What does "legislative intent" mean?
Legislative intent means a legislative body (typically the US Congress but could also be a state legislature) has mentioned something about a project in legislation.

Why would lawmakers get involved?
Sometimes constituents are frustrated that a particular project is not getting timely or adequate funding at the state or local level. They ask their legislative representative to get the project done. Other times, a particular route may receive a designation (such as a "high priority project").

How can I consider legislative intent when I am crafting my Purpose & Need?
It depends on what Congress (but not a state legislature) has said:

- If Congress (but not a state legislature) exempts a project from NEPA, there is no reason to develop a Purpose & Need. This is extremely rare, but it can happen.
- If Congress does not exempt a project from NEPA, then project-specific legislation does not necessarily determine the project purpose—you must still exercise judgment in the NEPA process when deciding whether, and to what extent, to incorporate legislative intent into the project purpose.

> Unless legislative intent exempts you from compliance with relevant laws (e.g. NEPA), legislative intent cannot be used as the sole reason for directing decisions on the project.

If my project is not exempt from NEPA, how do I consider legislative intent?
Probably one or more underlying problems led to the initiation of your project long before the lawmakers got involved. Figure out what those initial problems were. Maybe they are the same problems as what you are experiencing today. If so, then focus on those transportation problems as you craft your primary purposes.
Legislative intent may influence some of the decision-making, but isn't it better to say "*the purpose of this project is to solve this [safety, congestion, other] problem*" rather than "*I'm doing this project because Congress told me to*"?

So before incorporating legislative intent into your P&N statement, consider the following questions:

- Is there specific legislation related to the project? If so, what does it say? Does it call for a particular type of facility design (such as an Interstate)? Does it call for a particular location (such as the project must start/stop at a specific place)? Does it call for a particular mode (such as for all vehicles or just for transit)?
- Is there another source for information on legislative intent (a Conference Report—if one exists—can help you understand what Congress was thinking)?
- Are there other transportation-related purposes that might accomplish the same outcome as the legislative intent?
- Do you need legislative intent in your P&N? In other words, is there is another purpose that justifies the project without including legislative intent?

Environmental Protection in Purpose and Need

What is my agency mission?
Environmental protection is not the mission of transportation agencies. Therefore, if you work for a transportation agency, you should not include environmental protection as a primary purpose.

> The "Executive Order 13274 Task Force on Purpose and Need" report states: "*for the bulk of transportation projects, most staff across Federal agencies agreed that although environmental protection and community enhancement are important goals, these issues should not be a part of the purpose and need statement itself*."

What should I focus on?
Your project should focus on the transportation need. Even if your project seems to be focused on an environmental issue (such as a stormwater project), there still should be an underlying transportation problem (such as sub-standard highway runoff treatment).

So how can I still protect the environment?
In the example in the box to the right, clearly there is a desire of the community to "*preserve", "enhance",* and *"complement"* the environment. However, this is in the context of solving transportation problems. Proposed projects from this plan should focus on solving the transportation problems.

> From an actual Metropolitan Transportation Plan:
> "*Goal—Develop a transportation system that preserves and enhances the natural and built environment.*
>
> *Objective—Support transportation projects that may preserve and complement the Urban Area's natural features*".

Remember, as you go through the NEPA process, you are looking for ways to mitigate adverse impacts from your project. Environmental protection relates to how you evaluate alternatives—not the reason you are proposing a project.

So ask yourself if you are trying to solve an environmental protection problem with a transportation project.

Additional Resources:
- Executive Order 13274 Purpose and Need Work Group: dot.ca.gov/ser/downloads/general/pn_report_eo13274.pdf

Economic Development in Purpose and Need

How does transportation fit into economic development?

The transportation system only has an influence on economic development. Think about all of the other types of infrastructure that can affect economic development—water, sewer, telecommunications, electricity. Then think about other influences—available land, quality of schools, quality of life, the price of land, the available workforce. All of a sudden, you realize that making a change to the transportation system cannot guarantee a better economic situation.

So how do I include economic development into my Purpose & Need?

By focusing on the underlying transportation problem and understanding how it can influence economic development.

For example, maybe a new employer needs road improvements to be successful. Rather than crafting your purpose to be something like "*increase economic development*", focus on the underlying transportation problem—maybe the lane width doesn't meet current design standards, maybe a thicker pavement is needed for the heavier vehicles, maybe the roadway geometry doesn't allow for safe movement of large vehicles, maybe the roadway is heavily congested.

Which of these sample purposes is best for a transportation agency to solve:

- *The purpose is to promote economic development.*
- *The purpose is to provide a transportation system that supports economic development.*
- *The purpose is to bring the road up to current design standards and to accommodate future traffic projections.*

What is your range of reasonable alternatives for each of these? If your purpose is promoting economic development, don't you think there will be many alternatives beyond your control (lower property rates, expanded sewer system, better internet speed, more skilled workers…)

By improving the transportation slice of the economic development pie, you are essentially doing your part for economic development but you are framing the problem from a transportation perspective.

Additional Resources:

- FHWA elements of Purpose and Need: www.environment.fhwa.dot.gov/projdev/tdmelements.asp
- FHWA Performance Based Planning and Programming: http://www.fhwa.dot.gov/planning/performance_based_planning/

National Defense/Security in Purpose and Need

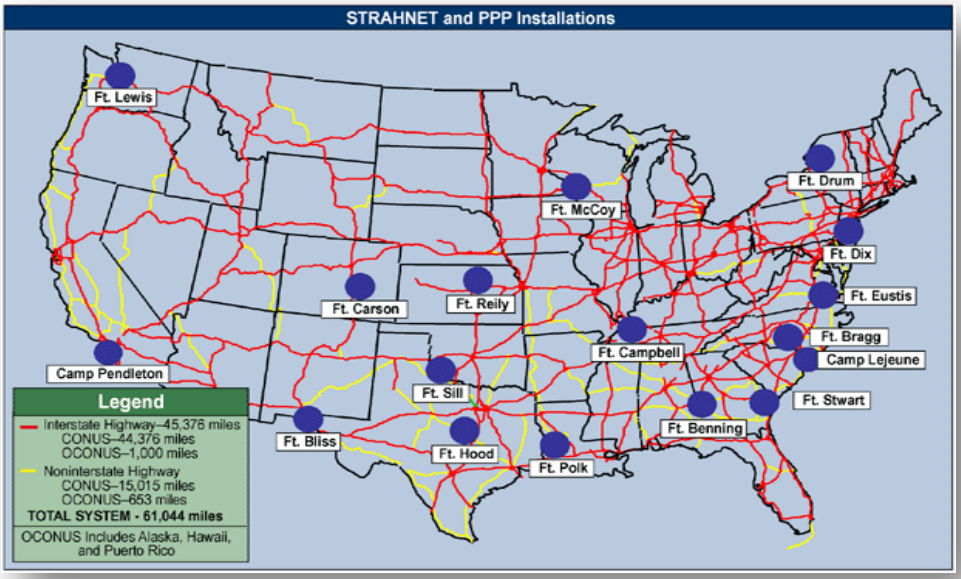
Transportation systems are vital to our national defense/security. In addition to any military installations in your state, you should be aware of several critical surface transportation modal systems that may be present within your state:

- Strategic Highway Network;
- Railroads for National Defense; and
- Ports for National Defense.

How do highways fit in?

The two most important national defense functions related to highways are to:

- Identify the minimum public highway infrastructure that the US Department of Defense needs to fulfill its mission; then integrate these public highway needs into civil policies, plans, and programs; and
- Ensure the defense readiness capability of public highway infrastructure and establish policy on how the Department of Defense uses the public highway system.

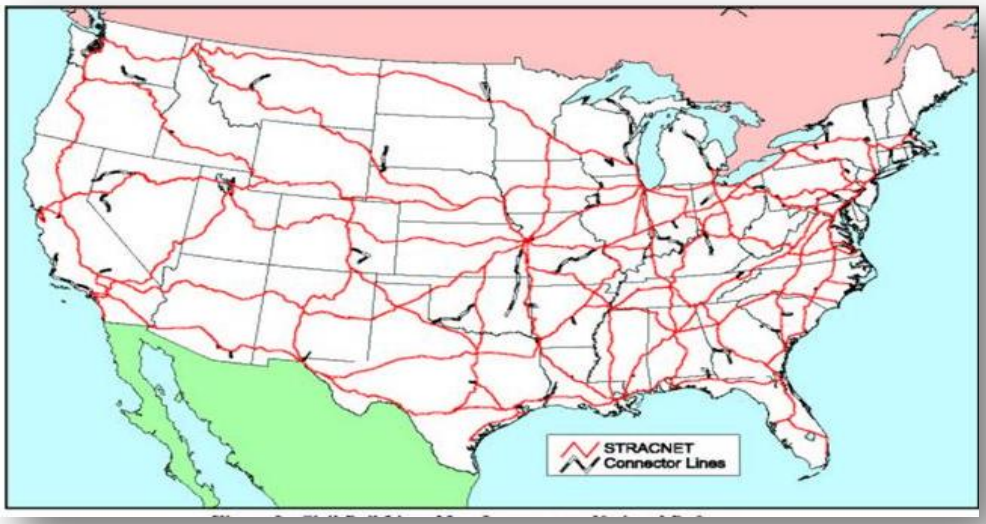


The Strategic Highway Network represents the Department of Defense's public highway needs. It is a system of about 61,000 miles of highways and it defines the minimum public highway network necessary to support Defense deployment needs (see map to the right).

How does rail fit in?

The Railroads for National Defense Program ensures the readiness capability of the national railroad network to support defense deployment and peacetime needs. This program integrates defense rail needs into civil sector planning affecting the Nation's railroad system. Rail transportation is extremely important to the Department of Defense since heavy and tracked vehicles will deploy by rail to seaports of embarkation.

The Railroads for National Defense Program, in conjunction with the US Federal Railroad Administration, established the Strategic Rail Corridor Network. The purpose is to identify the Department of Defense's minimum rail needs. Coordination with appropriate transportation authorities is critical. This program is an interconnected and continuous rail line network consisting of over 38,000 miles of track serving over 170 defense installations (see map below).



How do ports fit in?

The Ports for National Defense Program's primary goal is to ensure the identification, adequacy, and responsiveness of defense-important Continental United States port infrastructure in both peacetime and wartime (see map below).

So how should I consider National Defense/Security?
Before you consider National Defense/Security in your P&N statement, you should confirm:

- Your transportation facility is located on (or intersects) the Strategic Highway Network, the Strategic Rail Corridor Network, a strategic seaport or a military installation; and
- You have support from the military that there is some sort of military deficiency related to your transportation facility.

For example, if your proposed project happens to be located on the Strategic Highway Network, congestion is the underlying need for the project, and the military has not indicated a problem, then you really should not identify National Defense/Security as a need.

For example, if your proposed project is located on the Strategic Highway Network, the bridges over the road have less than 16 feet of vertical clearance, and the Department of Defense is concerned about the substandard vertical clearance, then using National Defense/Security as a purpose makes sense.

Real Example: The Department of Defense eliminated public access to Beulah Street and Woodlawn Road within Fort Belvoir after 9/11. Removal of these routes substantially diminished the flexibility of traffic movement. The purpose was articulated as "…*to restore this link with a roadway on an alignment that does not threaten the security of Fort Belvoir*".

Additional Resources:

- US Army Transportation Engineering Agency: tea.army.mil/DODProg/default.htm
- Map of the Strategic Highway Network for each state: fhwa.dot.gov/planning/national_highway_system/nhs_maps/
- Railroads for National Defense: sddc.army.mil/sites/TEA/Functions/SpecialAssistant/Pages/RailroadsNationalDefense.aspx
- Ports for National Defense: sddc.army.mil/sites/TEA/Functions/SpecialAssistant/Pages/PortsNationalDefense.aspx
- FHWA Memo on "Vertical Clearance, Interstate System": fhwa.dot.gov/design/090415.cfm