

**Going the Distance Together:  
Context Sensitive Solutions for Better Transportation**

**A Practitioner's Guide**

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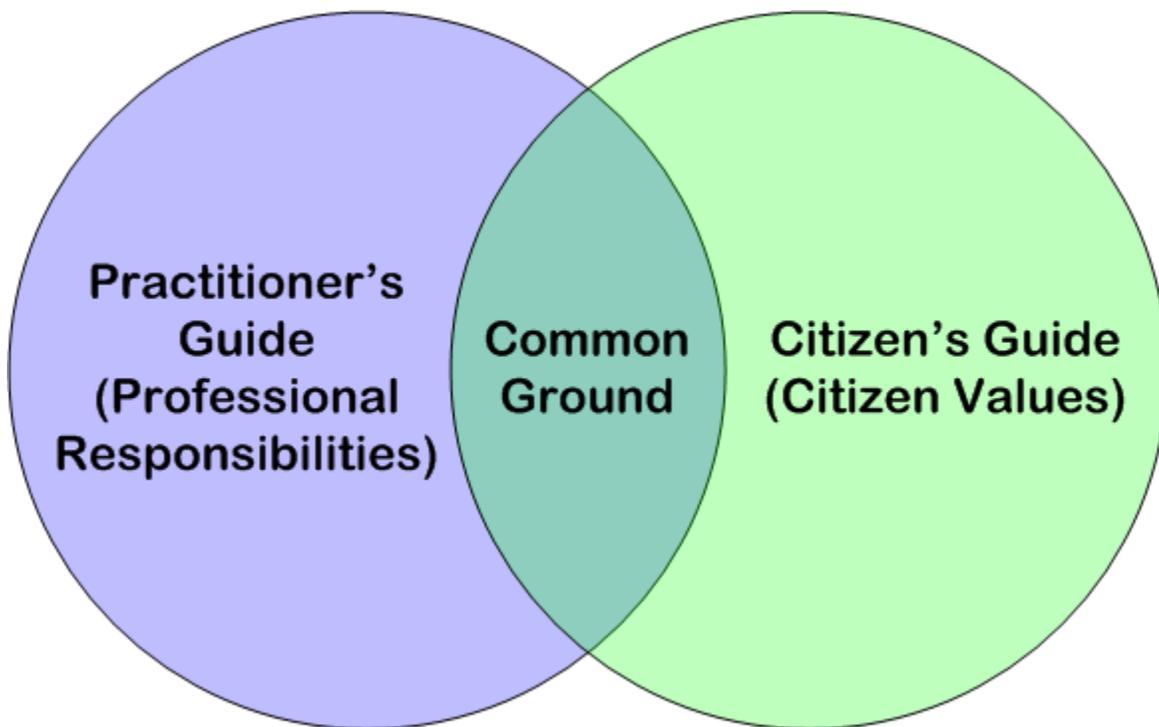
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## INTRODUCTION A READER'S GUIDE

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Transportation professionals comprise a very diverse group of individuals that not only represent multiple disciplines, but also expertise on multiple modes of transportation and phases of transportation decision-making (policy, planning, programming, environmental studies, design, construction, operations, and maintenance). In short, there are many professionals involved in the “[life of a transportation project](#).” This guide speaks to all these professionals as “[transportation practitioners](#)” charged with helping provide mobility options to all citizens to support a good quality of life.

The focus of this guide is to help the practitioner build collaborative relationships; understand citizen values, interests, and needs; and produce effective and efficient decisions. There are several reasons why this is important, as presented in [Section 1.1](#). The concept of “walking in another person's shoes” is an appropriate metaphor to explain the purpose of this guide. The overarching goal of this guide is to help practitioners find common ground with citizens by listening to them and understanding how transportation affects their quality of life. This guide is a companion to the [Citizen's Guide](#), which is focused on helping citizens understand the life of a transportation project, including their own roles in the process and the professional expertise and responsibilities of practitioners. The key message being conveyed by both guides is that practitioners and citizens share responsibility for solving transportation problems. However, this also implies that each group must work hard to understand and embrace the other's perspective and co-create shared solutions.



A core focus of this guide is translating citizen and practitioner perspectives through the lens of [quality of life considerations](#). This is done within the guide by emphasizing the importance of using interdisciplinary team expertise and consensus building techniques to define context and shape transportation decisions. While this guide does not provide a prescription for every type of challenge that practitioners face, it does provide a framework for understanding transportation as an element of the quality of life within a community or region, and provides examples, resources, and tools to help deliver transportation projects that enhance a community's quality of life. Some of the benefits this approach can provide to practitioners include:

- Improved customer/stakeholder satisfaction
- Reduction in agency costs of delivering its projects, programs and services

- Delivery of projects on time and within budget
- Cultivation of relationships that lead to financial partnerships
- Assistance with prioritizing project needs and allocating limited funds
- Increased job satisfaction

This guide uses the concept of “Context Sensitive Solutions” (CSS) as its foundation.

“CSS is a collaborative, interdisciplinary approach that involves all stakeholders in providing a transportation facility that fits its setting.” – AASHTO and FHWA, CSS Strategic Planning Process Summary Report

**This link** provides additional information on the CSS process, and is also accessible throughout this guide by clicking on the “What is CSS?” link on each page.

While it is best to review the entire guide, it is organized such that practitioners can browse to the sections of greatest interest to them. There are many hyperlinks to resources throughout the guide that lead the readers to a wealth of resources intended to help practitioners meet the expectations of the citizens they serve while being professionally and fiscally responsible.

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# CHAPTER 1: TRANSPORTATION AND QUALITY OF LIFE

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## Summary

*Understanding a community's quality of life considerations, including community values, is critical to planning, developing, delivering, operating, and maintaining transportation infrastructure effectively and efficiently.*

- *Practitioners and citizens are equally responsible for working together to develop solutions that reflect community values and improve quality of life.*
- *Working together, practitioners and citizens can form a collaborative partnership around defining the context, in which to shape shared solutions.*

### Section 1.1 – Why Do I Care?

### Section 1.2 – Who Is Responsible for the Future?

### Section 1.3 – How Can We Get There?

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## CHAPTER 1: TRANSPORTATION AND QUALITY OF LIFE

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### Section 1.1 – Why Do I Care?

**“People don't care how much you know until they know how much you care”**

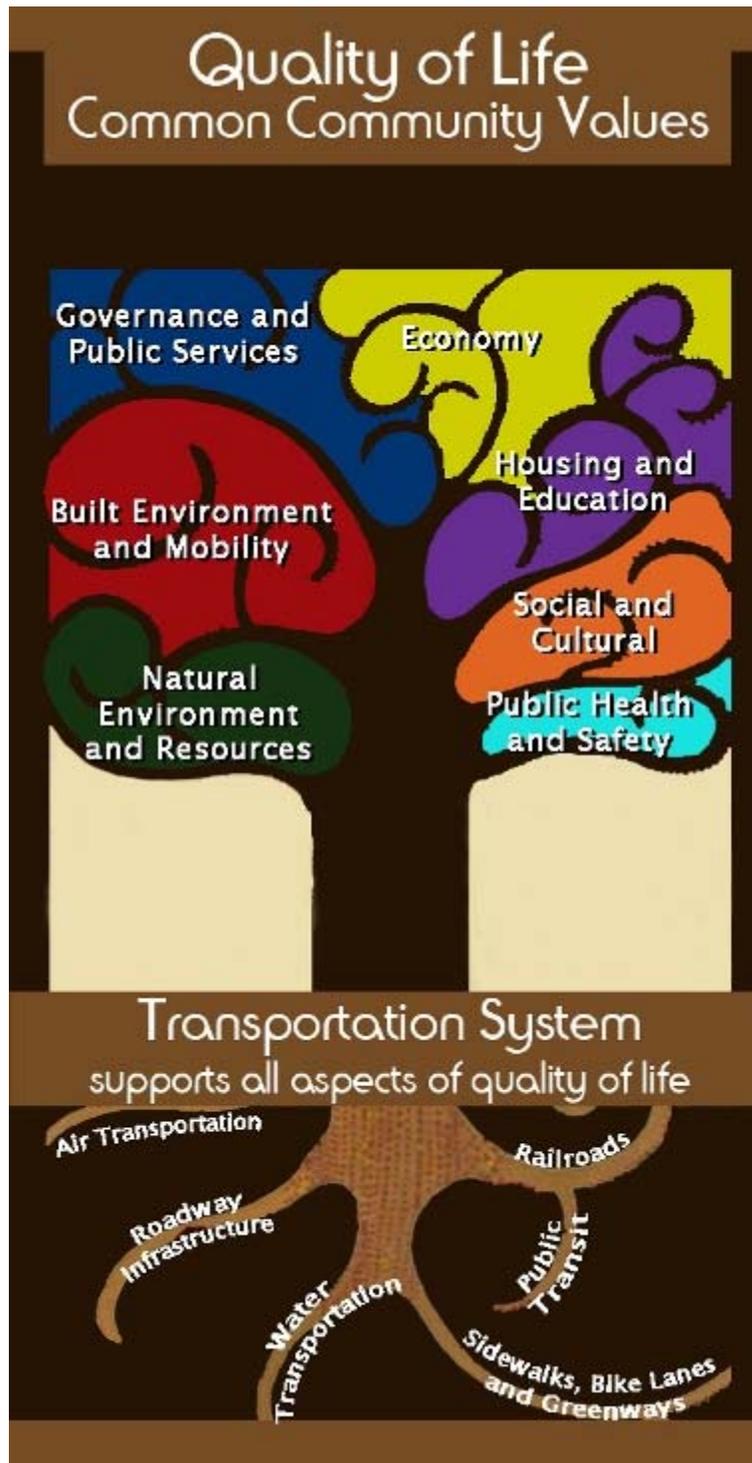
**– John C. Maxwell**

Transportation practitioners come to work every day with the best intentions to work diligently and be part of a positive solution to transportation problems, and yet they face mounting challenges, including responding to ever-changing policy initiatives, federal, state and local government election results, angry customers, frustrated communities, bureaucratic paper work, processes that do not work for

all situations, funding shortages, and most of all a lack fundamental trust between government officials/staff and the citizens they serve. Practitioners must fulfill their professional responsibilities in a way that satisfies the interest and needs of the citizens they serve. This requires a sincere desire to fully understand what communities really care about and try to translate that into tangible transportation solutions. This only happens when practitioners really stop to listen to the concerns of citizens, which are generally conveyed in terms of how transportation affects their quality of life.

**Transportation practitioners** – civil servants within government agencies, as well as independent professional consultants, who operate “where the rubber meets the road.” Here you will find a vast talent pool responsible for 20-year metropolitan planning and programming, environmental studies, project design, acquisition of real estate, construction, and operations and maintenance for transportation facilities and services. Depending on the nature of the project, experts from many fields may be involved in an interdisciplinary team. The expertise they bring represents professional qualifications in engineering, planning, natural and social sciences, as well as many technical or specialized fields needed to understand the transportation, community, and environmental context of the plan or project. Practitioners include both technical staff and policy making decision makers, all of whom have a significant role in planning, designing and building transportation systems that are sensitive to their context and support both the overall quality of life in the communities they serve and the needs of the traveling public.

The image below serves as an illustration of the connection between transportation services and the quality of life in a community. In it, transportation systems serve as the roots of the tree of Quality of Life, providing support to all its various elements.



**“Listening is a magnetic and strange thing, a creative force. The friends who listen to us are the ones we move toward. When we are listened to, it creates us, makes us unfold and expand.”**

**– Karl A. Menninger**

While practitioners understand and have concerns about quality of life, they do not always connect the dots on how the decisions made in their jobs can cause changes in the quality of life within a community. These quality of life concerns include safety for all users, economic decline, lost productivity from time sitting in traffic congestion, dwindling energy supplies, climate change, increased rates of obesity, higher rates of crime, less physical activity and social interaction, and higher drop out rates in high school. Often,

transportation practitioners point to other practitioners that work in phases of decision-making before or after them as the responsible entities to deal with issues; or, even more commonly, consider other agencies to be the responsible party to

address quality of life concerns. In truth, transportation does support all aspects of quality of life and it is important that practitioners make understanding quality of life considerations a focus of their jobs in order to develop solutions that support community values and goals. This can be difficult to do sometimes, because transportation organizations are often organized into a series of silos, with each silo responsible for a single element of the transportation development process. These silos sometimes keep practitioners from understanding each others' roles and responsibilities and how they may interrelate (i.e. transportation planning, programming, development, delivery, operations and maintenance) [Section 3.2](#) provides detailed information on the different phases of decision-making in the life of a transportation project. Other challenges result from not understanding the varied disciplines that make up the transportation practitioner community and how they can help each other solve problems. Also, sometimes practitioners do not understand what stakeholders want or reach out to find partners to help them solve problems.

Practitioners are looking for answers on how to better serve their customers while still respecting their professional responsibilities. This guide is intended to help practitioners see the connections between their roles and responsibilities throughout the life of a transportation project, and more importantly identifies the broad set of questions that should be asked to properly define the context and make decisions that support improved quality of life outcomes. It also gets “under the hood” of decision-making processes and helps practitioners see where flexibility may exist so they can release the creativity that is part of their professional training and ethic.

**“I never perfected an invention that I did not think about in terms of the service it might give others....I find out what the world needs, then I proceed to invent.”**  
– Thomas Edison

This guide is not panacea, but it is a chance for practitioners to think about their professional responsibilities and their jobs differently, explore new ideas, and most importantly initiate a meaningful dialogue with their partners, stakeholders, and the people who depend on them to do their jobs with honor, respect, compassion, and responsibility.

Investments in our nation’s transportation infrastructure can yield important community and social benefits. They can increase mobility and access, provide a greater choice of travel modes, improve safety, enhance the visual appearance of our communities, cities, and natural landscapes, and increase community cohesion. In short, transportation investments can improve the quality of life. While social benefits are more difficult to quantify than economic and environmental benefits, they are nonetheless every bit as important. Making a neighborhood, city, or region more livable can spur economic development by making it more attractive for businesses and residents to relocate there.

But what defines a “livable” community? While the term means different things to different people, most can agree that, at the very least, a livable place is one that is safe, clean, and healthy; offers a variety of stable job opportunities; has adequate housing, retail, and community services; has a sense of neighborliness; and offers cultural and recreational opportunities close at hand.

With this broad definition in mind, it is easy to see why transportation investment can influence livability. A highway built near a rural community has much the same effect today as did a new railway line a century and a half ago. Overnight, the isolation ends; the community becomes a part of a network, and the number of destinations within an hour’s travel time increases many fold. Similarly, an attractive, tree-lined main street, complete with wide sidewalks and “street furniture” – benches, bus shelters, trash cans, and the like – is a source of community pride and a magnet for walkers, shoppers, and tourists. In this way, both places become more livable – they become places where people want to be. Of course, transportation investment can make a place less livable as well if not done sensitively.

*From “Community and Social Benefits of Transportation Investment”*  
[http://www.transportation.org/sites/planning/docs/nchrp22\\_3.pdf](http://www.transportation.org/sites/planning/docs/nchrp22_3.pdf)

## **Why Should My Agency Care?**

Practitioners take their cues from the top. When overall quality of life and collaboration are priorities at the top of an organization, practitioners are more likely to implement these values through their technical work and day-to-day decision making.

There are several reasons why transportation agencies should be concerned about quality of life in the communities they serve. When agencies proactively collaborate with citizens and other stakeholders in the communities they serve, there are several tangible benefits that can accrue, including:

- Better relationships with stakeholders, leading to faster project delivery, which saves time and money
- Development of cost-effective solutions meeting multiple goals
- Development of partnerships with stakeholder groups, resulting in shared decisions and the potential for shared funding of projects
- Conservation of community and natural resources, potentially streamlining the NEPA process
- Building of support for projects among the public and resource agency partners
- Assistance in identifying project funding priorities

The following links have additional detailed information on the benefits of CSS from a transportation agency perspective:

[Why is CSS Important to Transportation Agencies?](#) – AASHTO Center for Environmental Excellence

[Driving to Success with CSS](#) – AASHTO and Federal Highway Administration

# WHY DO I CARE?

Maintaining and improving transportation safety - through both infrastructure and driver behavior - is a matter of critical importance to citizens and practitioners.



"The population is aging, and the future transportation system needs to be mindful of that change in demographics. By the year 2020 there will be 40 million people in this country over the age of 65 who will still have a license in their pockets and their hands on the steering wheel. And that number of older drivers is something we need to factor into our vision. It's not just a matter of allowing them to drive, it's a matter of offering them alternative transportation solutions."

*Robert Darbelnet, President, AAA*



"Approximately one in four of the nation's bridges are either in need of significant repair or are too narrow to handle today's traffic."  
*AASHTO, America's Top Five Transportation Headaches - and Their Remedies, 2009.*

## WHY DO I CARE?

"I cannot express strongly enough the importance of transportation in our rural communities. For many of our people our public transit system is their only link to medical treatment, senior meal programs, personal business and shopping, and for employment. With increased costs for fuel, equipment and drivers, it is my hope that you will consider increasing funding for public transportation in rural areas."

*AASHTO, You Told Us What the new President and Congress should know about transportation, Capturing America's Ideas for the Future, 2009.*

Providing mobility options improves public health, and reduces transportation costs and the need for additional vehicle capacity.



"Every dollar invested in the nation's public transit system provides \$6 in benefits in time savings, parking savings, avoided job loss, avoided welfare payments, avoided vehicle crashes, avoided congestion and pollution, increased central city labor opportunities, increased mobility for people without private vehicles, and improved educational opportunities."

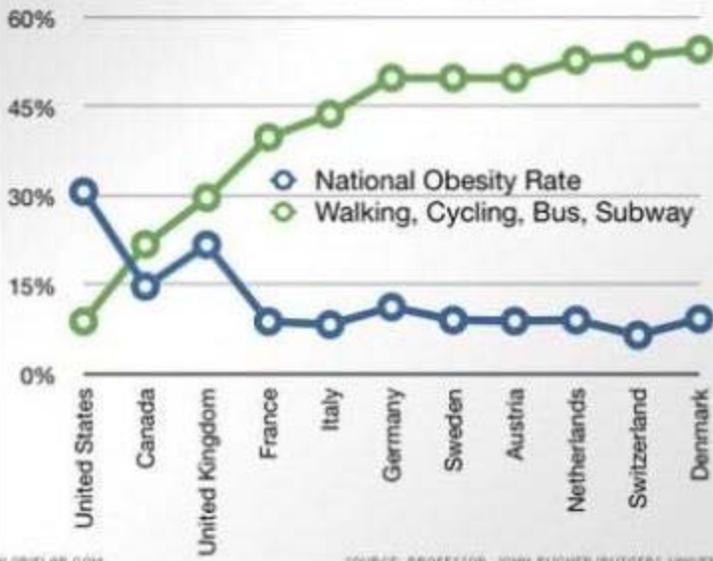
*AASHTO, America's Top Five Transportation Headaches - and Their Remedies, 2009.*

"Active transportation makes other modes work better. Transit and biking allow people to opt out of congestion. We can provide cost-effective mobility solutions, handling short trips of three miles or less, those that are of easy walking or biking distance."

*Kevin Mills, Vice President, Rails to Trails Conservancy*



### Do Cars Make Us Fat?



HLORIELAB.COM

SOURCE: PROFESSOR JOHN FUCHER/RUTGERS UNIVERSITY

"A growing body of research has shown that most of the health benefits can be obtained from regular physical activity of moderate intensity rather than formal exercise programmes aimed at achieving high levels of physical fitness. Generally, there is a need to make the exercise as pleasant and accessible as possible. In the US and the UK, walking at a brisk pace is considered to be the cheapest and the most acceptable form of exercise."

*Howard Oxley, Organization for Economic Cooperation and Development, Health Working Paper No. 42, 2009*

## WHY DO I CARE?

“Currently, American adults travel 25 million miles a day in trips of a half-mile or less, of which nearly 60 percent are vehicle trips. A 2005 Seattle study found that residents traveled 26 percent fewer vehicle miles in neighborhoods where land uses were mixed and streets were better connected... If a large share of the traveling public could walk or bike for short trips, it is estimated that the Nation could save over one million gallons of gas and millions of dollars in motor fuel costs per day.”

*Ray LaHood, Secretary of Transportation, 2009.*

Careful planning of transportation in conjunction with land use design and environmental principles can reduce car trips, protect natural resources, and enhance the community's quality of life.

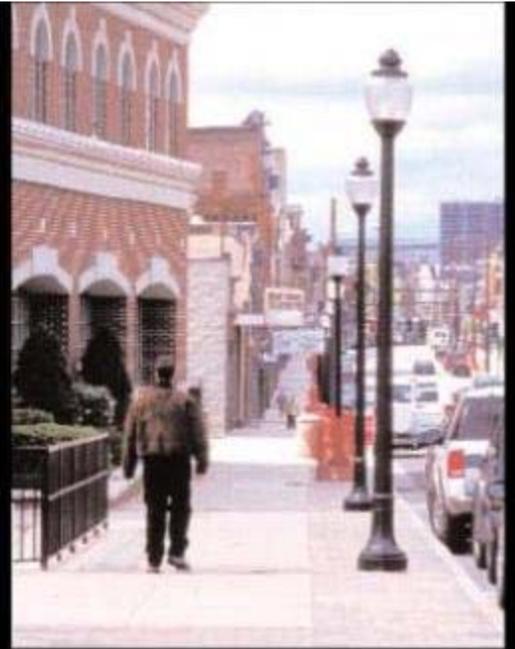
**Twelve Ways Transportation is Enhancing Communities:** See <http://downloads.transportation.org/highroad/HighRoad-02.pdf>



The Green Highways Partnership (GHP) is a voluntary, public/private initiative that is revolutionizing our nation's transportation infrastructure. Through concepts such as integrated planning, regulatory flexibility, and market-based rewards, GHP seeks to incorporate environmental streamlining and stewardship into all aspects of the highway lifecycle. Partners include FHWA, USEPA, Maryland SHA. See <http://www.greenhighways.org/>

"Kentucky Transportation Cabinet has provided over \$70 million for historic preservation efforts over the past 10 years, at least 70 percent of funding in the state. The funds have been used for restoring façades of public buildings, creating pedestrian-and bicycle-friendly streetscapes, preserving historic sites, protecting scenic byways, converting abandoned railroad corridors for trails, and rehabilitating historic transportation buildings into museums and visitor centers."

*David Morgan, Kentucky State Historic Preservation Officer*



## Transportation Can BENEFIT Place



**"Transit plays an important placemaking role by spurring the kinds of people-friendly, business and community building activities that help rejuvenate places."**  
*Project for Public Spaces, Streets as Places: Using Streets to Rebuild Communities, 2008.*

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## CHAPTER 1: TRANSPORTATION AND QUALITY OF LIFE

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### Section 1.2 – Who Is Responsible for the Future?

Practitioners have invaluable expertise, knowledge and skills needed to solve problems, and their stakeholders understand the problems that need to be solved; therefore, in order to find the best solutions, practitioners and citizens need each other.

**“Alone we can do so little; together we can do so much.”**  
– Helen Keller

Neither practitioners nor citizens can do this alone. Practitioners need all their stakeholders to co-create solutions to meet transportation needs (local, state and federal government transportation agencies; environmental resource agencies; consultants and contractors; developers; local elected officials; economic development agencies; non-profit advocacy organizations; community organizers; and the general public).

Each stakeholder provides a unique perspective that contributes to understanding context, which includes quality of life considerations, community values, laws, policies, and procedures. For example, citizens vote for elected officials (federal, state and local) who initiate policies that practitioners must implement through the development of guidelines and procedures. Environmental regulatory agencies enforce laws that elected officials have enacted to create certain desired outcomes. Practitioners are sandwiched in the middle of this process as the implementers, and therefore have a unique responsibility to understand the different roles of both stakeholder groups (elected officials and citizens), as well as what perspective each group brings to the decision-making table. However, citizens also have a critical say in which policies are pursued by government officials, indirectly influencing practitioners' job responsibilities. Therefore, both citizens and practitioners have intersecting roles and responsibilities as both reach toward the common ground of improved quality of life.

The mantra of this guide is one of collaborative partnership to craft shared solutions that honor professional responsibilities and reflect community values. The collaboration begins before any concept of transportation improvement is even envisioned, and is carried through to how transportation infrastructure is operated and maintained. This journey together begins by making sure that citizens and practitioners are listening to each other and helping each other understand how their actions and decisions shape solutions. [Section 3.2](#) contains more information on the phases of the life of a transportation project.

**“Listening is very inexpensive; not listening could be very costly!”**  
– Tom Brewer

Just as the practitioner is responsible for understanding community interests and needs, and translating those into possible solutions that reflect citizens' values, so too are citizens equally responsible for being proactively engaged and becoming educated about transportation decision-making processes and associated major players.

Citizen's Guide – The Citizen's Guide serves as a companion to this Practitioner's Guide, with a focus on the roles and responsibilities of citizens within the transportation development process.

[Click here](#) to access the Citizen's Guide.

Practitioners also must respect the differing roles and responsibilities of the government entities they work for, including local, state, regional, and national agencies or organizations. This can pose challenges for practitioners when elected officials try to impose policy, program and/or project initiatives that are at odds with the values of the citizens they represent. While there are no simple answers to this dilemma, practitioners have a professional responsibility to educate and inform elected officials about the potential consequences of their actions on community quality of life and to help citizens understand how to influence transportation decision-makers.

## Major Transportation Players

### THE PLAYERS

### THEIR ROLES/WHAT THEY CONTROL

#### National

##### Congress

- Enacts national transportation laws
- Approves funding levels for transportation programs
- Enacts annual transportation appropriations; establishes formula for allocating funds to states, Metropolitan Planning Organizations, and transit agencies
- Maintains oversight for implementation

##### Federal Highway Administration (FHWA) and Federal Transit Administration (FTA)

- Establish rules, regulations, and guidance to interpret how laws are to be carried out and manage programs
- Provide technical assistance and guidance on best management practices for transportation plans, programs, projects, and system management; support research
- Administer federal transportation funding

##### Others, including the U.S. Environmental Protection Agency, U.S. Army Corps of Engineers, U.S. Department of the Interior, and Federal land management agencies

- Have a role in some aspects of planning, project review and/or project implementation, helping to determine protections for public health, environmental and historic resources, parks, and other resources that may be impacted by transportation

#### State

##### Governor

- Appoints the head of the state DOT and often, members of a state transportation board
- Submits legislation to the state legislature
- Initiates the state budget process

##### Legislature

- Enacts state transportation laws and annual transportation appropriations
- Approves funding levels for state programs
- Maintains oversight for implementation

##### Department of Transportation (DOT) or State Board/ Commission

- Plans, designs, builds, maintains, and operates state highway system
- Owns and operates other transportation facilities - ferries, airports, transit services, rail lines
- Develops statewide long-range transportation plan and transportation improvement program

##### Air Quality Planning Agency (may be a regional agency in some metropolitan areas)

- Develops regional emissions budget for each metropolitan area where air quality exceeds national standards established to protect public health
- Determines emissions budgets for mobile sources that must be

	reflected in the Long Range Transportation Plan (LRTP) adopted by the Metropolitan Planning Organization (MPO)
<b>Regional</b>	
Metropolitan Planning Organization (MPO)	<ul style="list-style-type: none"> <li>• Prepares a Long Range Transportation Plan (LRTP) and a Transportation Improvement Program (TIP) that meet the air quality emission budget (in non-attainment areas)</li> <li>• Directly controls some federal funding for projects</li> <li>• Primarily a transportation policy and planning body and usually does not control land use or operate transportation facilities</li> </ul>
Regional/Local Transit Agencies	<ul style="list-style-type: none"> <li>• Plan for and operate transit services, including paratransit; usually separate from state department of transportation</li> <li>• In urban areas, must coordinate with MPO in development of LRTP and TIP</li> <li>• Larger systems are direct recipients of federal transit funds</li> </ul>
Rural Planning Organization (RPO)	<ul style="list-style-type: none"> <li>• Many states have developed regional agencies/organizations to address rural transportation issues, outside MPO areas; roles and responsibilities vary by state, but RPOs generally are responsible for coordinating transportation planning in the area</li> </ul>
<b>Local</b>	
Elected Officials (Mayor, County Executive, City and County Council Members)	<ul style="list-style-type: none"> <li>• Allocate local revenues for transportation</li> <li>• Serve on the MPO board with state transportation agency, regional transit agency, and others appointed by the governor</li> </ul>
Local Department of Transportation or Public Works	<ul style="list-style-type: none"> <li>• Manages and operates local roads, streets, bridges, and a share of Federal-aid Highways (varies by state)</li> <li>• Construct, operate, and/or maintain some projects funded through the MPO process</li> </ul>
Local Planning Department	<ul style="list-style-type: none"> <li>• Develop local plans (for example, land use, road and/or multimodal transportation, capital improvement, etc.) that should be coordinated with overall transportation planning and priority-setting</li> </ul>

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## CHAPTER 1: TRANSPORTATION AND QUALITY OF LIFE

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### Section 1.3 – How can we get there?

**“Innovation is fostered by information gathered from new connections; from insights gained by journeys into other disciplines or places.”**

**– Margaret J. Wheatley**

Transportation practitioners face some of the most challenging yet opportunity-filled times in our country's history. Practitioners understand that the only way to meet today's and tomorrow's transportation needs is through collaboration with the people they serve as well as the many stakeholders that participate in the varied decision-making processes that inform the **“life of a project”**. However, the “how-to” of collaboration is less clear. Therefore, the focus of this guide is on laying out a framework to help practitioners collaborate in ways that lead to effective and efficient solutions that deliver on the

promise of improved quality of life for all citizens. The guide provides information and resources that form a pathway for practitioners to follow, including the following strategies:

- Willingness to listen to all citizens to accurately understand the context, in order to deliver desired solutions.
- Incorporating quality of life considerations into defining context by asking the right questions and involving the right partners.
- Seeking **multi-disciplinary expertise** and working in an **interdisciplinary manner** to fully incorporate all aspects of context into the decision-making process.
- Searching for **flexibility in decision-making** to shape solutions that reflect quality of life considerations.
- Incorporating **meaningful and engaging stakeholder involvement** in all phases of the life of a project.
- **Measuring performance** to ensure outcomes meet expectations.

**“We can't solve problems by using the same kind of thinking we used when we created them.”**

**– Albert Einstein**

It is with a sense of optimism and enthusiasm that this guide has been written. Together, citizens and practitioners can both get where they need to go, but it will take courage to do things differently, education and communication to understand each others' perspectives, and an innovative spirit to reach outside each others' comfort zones to find mutually-agreeable solutions.

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## CHAPTER 2: DEFINING “CONTEXT,” THE FOUNDATION OF CSS

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### Summary

- *In order to solve a problem correctly, one must understand the context, which includes quality of life considerations, community values, transportation needs, and financial and legal parameters.*
- *Defining context first includes asking the right people the right questions.*
- *Professionals from many disciplines can help to comprehensively define context.*
- *Citizen stakeholders play an important role in defining context.*
- *Various tools and techniques can help to define context.*

#### Section 2.1 – What is "Context" and Why is it Important?

#### Section 2.2 – What Questions Should a Practitioner Ask to Define Context in the Six Phases in the Life of a Project?

#### Section 2.3 – How Can Different Disciplines Help to Define Context?

#### Section 2.4 – Why Consult Citizens as Part of Defining Context?

#### Section 2.5 – What Methods, Resources, and Tools can Help to Define Context?

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## CHAPTER 2: DEFINING “CONTEXT,” THE FOUNDATION OF CSS

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### Section 2.1- What Is “Context” and Why Is it Important?

#### ***What is context?***

One cannot understand or effectively solve a transportation problem without understanding the context in which that problem exists. Defining context is the *first and most important step* in effectively and efficiently planning, developing, delivering, operating or maintaining transportation infrastructure. What different parties see and value in a given place often varies a great deal. While a maintenance staff person may see an area to mow with difficulties presented by drop off or placement of the guardrail, others might see a unique population of rare plants or a special vista. This section will describe context, illustrate how it can be defined as a series of questions, relate it to a community’s quality of life, and provide resources for practitioners to use in defining context.

The term “context” represents an amalgam of components that include the Transportation Need (existing safety, mobility and infrastructure conditions), Project Logistics (financial, regulatory and political aspects), Natural Environment, and Human Environment (social, historic and cultural values) aspects. Asking the right questions to define context at the beginning of any phase of transportation decision-making is essential to correctly define the problem and avoid surprises later in the project development process that will cost time and money to solve. Defining context is a unique exercise for each **phase of transportation decision-making**. Questions are presented in **Section 2.2** to help practitioners understand what information is needed to assist with defining context in their particular phase of decision-making.

The term *context* tends to be misunderstood by many transportation practitioners because defining context is not easily disaggregated into neat packages of data and information that can be easily summed up. Context is similar to synergy, in that the result is greater than the sum of its individual parts/components. Context and meaning are multifaceted and can be viewed in many different ways. In addition, all communities have a unique context; therefore, practitioners can find the exercise of defining context an imposing task. Defining context involves not only collecting tangible data about an area but also gathering the intangible experiences of community members to help understand the values and perspectives of citizens. Therefore, the exercise of defining context must combine desktop exercises with field work and, most importantly, public engagement strategies to understand issues, interests, needs and priorities.

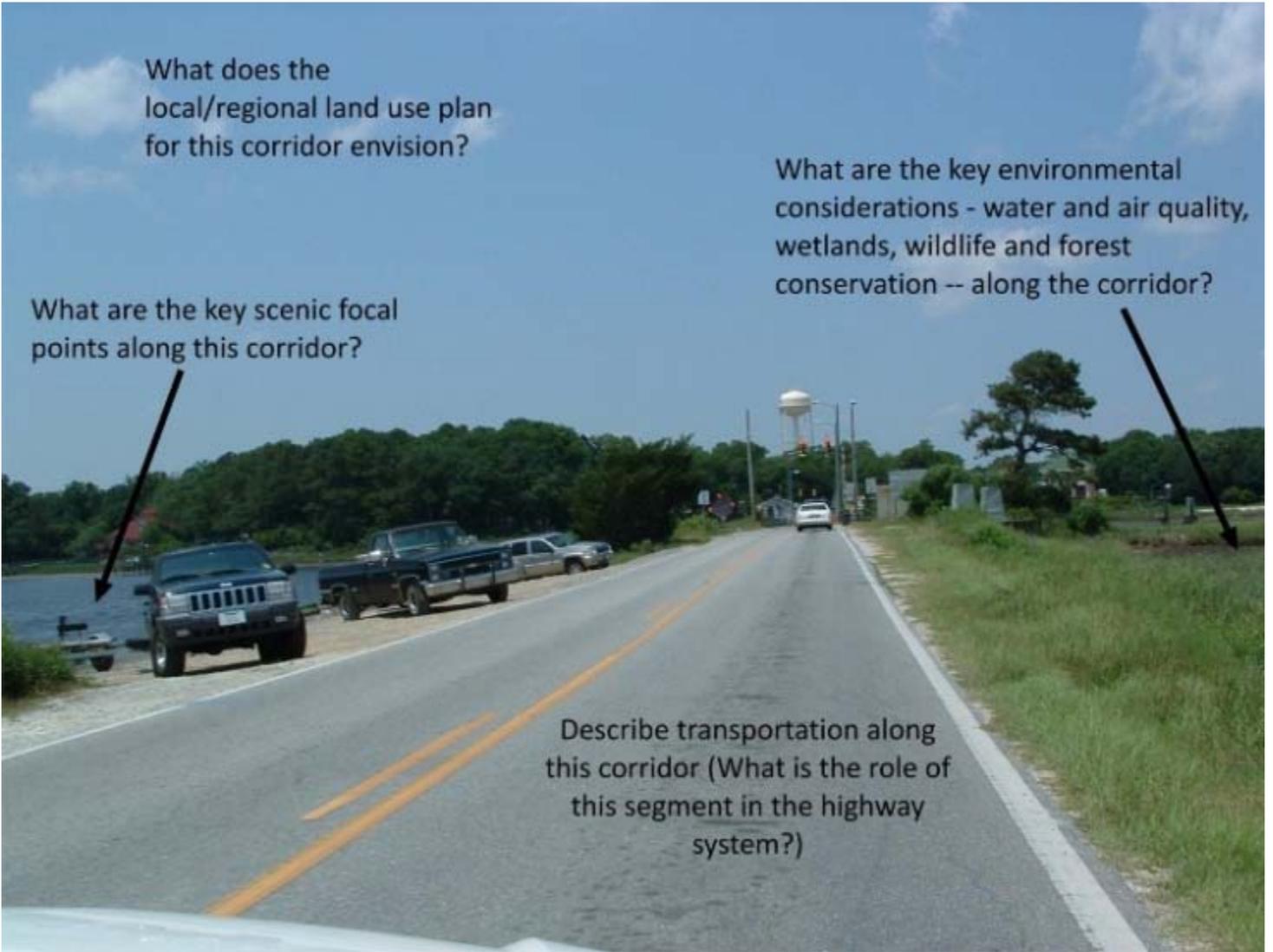
The illustrations below present a sample of questions a practitioner might ask to understand the context of the programs or project activities occurring in these locations. These are just a few questions to begin framing ideas, issues, and concerns that inform the context for collaborative decision-making between practitioners and citizens.

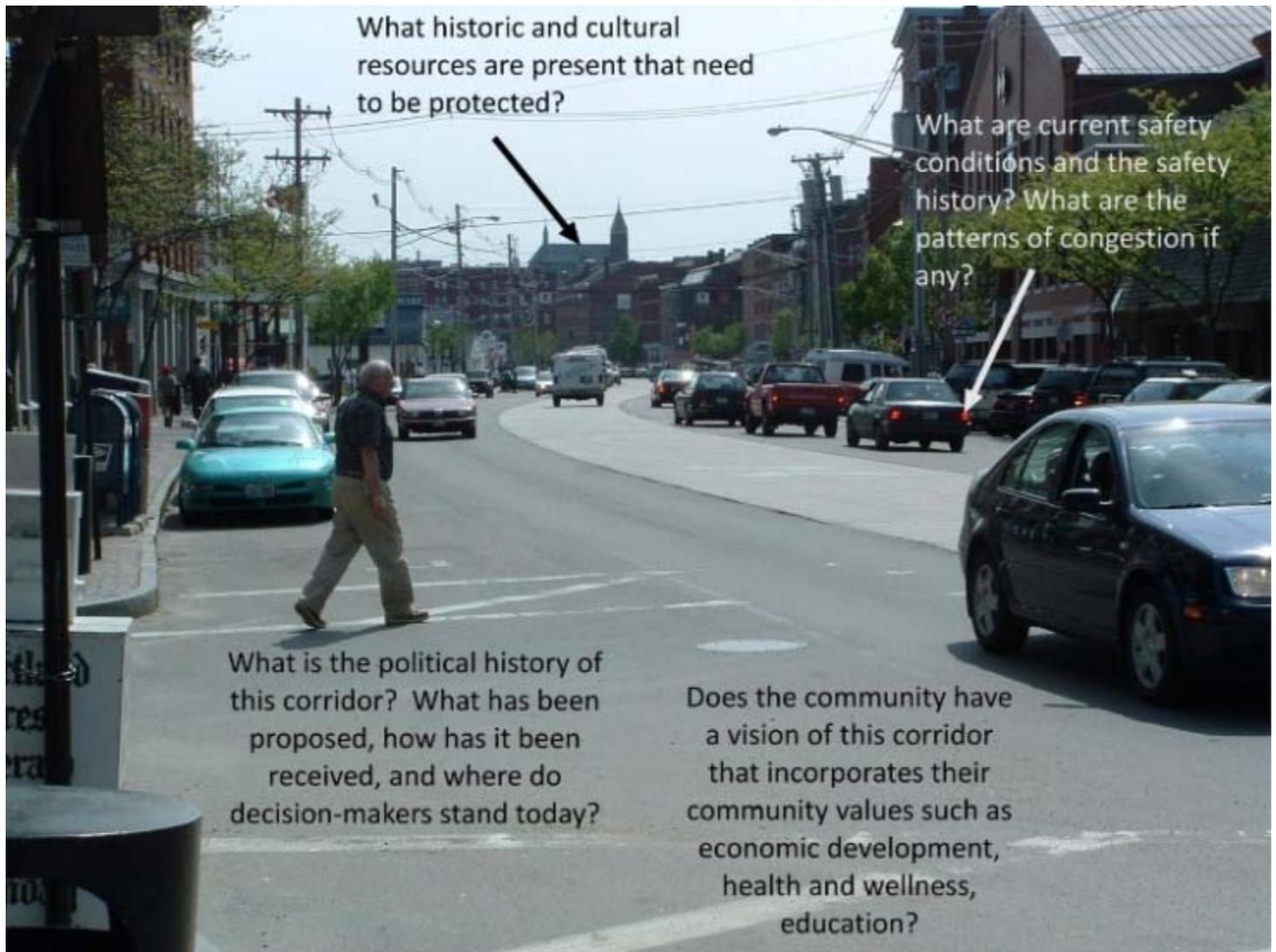
What does the local/regional land use plan for this corridor envision?

What are the key environmental considerations - water and air quality, wetlands, wildlife and forest conservation -- along the corridor?

What are the key scenic focal points along this corridor?

Describe transportation along this corridor (What is the role of this segment in the highway system?)





Following are several critical concepts for practitioners to keep in mind when defining context:

- *Perceptions influence context.* Level of service, for example, is subjective in terms of the level of service a particular community views as acceptable on a roadway. Stakeholders in a suburban setting in North Carolina may have a very different idea of an acceptable level of service than urban residents in New York City. Practitioners need to understand citizen perspectives to define context.
- *A community's adopted vision is a key to understanding context.* A number of communities have undergone a visioning process in order to better shape the future. A community vision attempts to articulate in a brief statement the values and goals of the community and its leaders. It describes the future that the community wants to work toward. This vision is used as the basis for additional planning efforts (long range plans, comprehensive plans, land use plans, etc). Practitioners can take a big step toward defining context by identifying how and where the community vision is expressed. It is often found on the community's website, planning documents, or even a stand-alone visioning document (see [Section 2.5](#) for more about visioning and planning documents). The Strategic Highway Research Program (SHRP II) has developed a model process for visioning as part of the transportation development/delivery process, which can be found by [clicking here](#). When working in communities with no formal vision, it is recommended that efforts be taken to understand the community's vision through [meaningful public involvement and engagement strategies](#) before significant planning or project development work begins. This can save time and money.
- *Consider both the current and the future context of a project.* Practitioners should not limit their thinking to the present-day conditions, but consider as well any expected or planned changes in the community such as major employers, other public investments (such as expanded transit service) that would affect the project, changing demographics, and conservation needs in the region. Adopted plans are a good source for this type of information

(see [Section 2.5](#) for more about plans). Where such plans do not exist, staff in other agencies can provide valuable perspective.

- *It can take many years for a transportation project to be implemented.* It is important that the needs and objectives identified at the onset of a plan or large project are still valid and able to be addressed by the alternatives once projects are in environmental studies and final design. If a project has been in the development process for a few years, a review of the project, cost estimate, and its consistency with current priorities should be completed at major decision points in the process.

#### Why is Context Important? (a parable)



The Smiths just had a new baby and are now a family of four. They mentioned one day to their neighbor Joe, a car salesman, that they really need a bigger car to fit four people. But they really can't afford to spend more than \$30,000. Then one day, Joe delivers to the Smiths a red four-door stick-shift sedan and requests payment. But the Smiths really wanted a car with some cargo space in the back, for their large dog and camping equipment, and an automatic transmission. They would have also liked a car with better gas mileage and in a different color. Plus, the new car is too wide to fit in their garage! They want Joe to change the car for another type, but at this point it would be very expensive to make that change. What happened here? The end users were only consulted in the decision-making process after it was too expensive to change the type of car; the decision was made based on capacity and budget only. What would have been different if the salesman had simply asked the Smiths a few questions up-front about their values and needs?

(Picture source: [www.dailyclipart.net](http://www.dailyclipart.net))

#### ***How is context related to a community's quality of life?***

Defining the context of a project requires an understanding of how transportation shapes communities and the daily lives of citizens. Transportation infrastructure (which includes access to transit as well as physical facilities) can impact, for example:

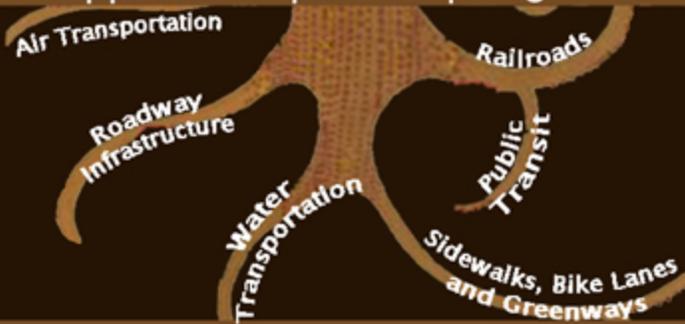
- Economy and employment, by affecting how long it takes (and how much it costs) people to get to work and how easily a business owner can ship his merchandise or raw materials
- Air quality, by affecting vehicle emissions through increased non-auto options like transit and walk/bike, and decreased traffic congestion with more efficient transportation networks
- Land use and development, by affecting how easily customers can access businesses and where it makes sense for people to live
- Safety and public health, by affecting how safely a child can walk or bike to school and how attractive it is for people to walk and bike for exercise

Economy, employment, air quality, land use, development, safety and public health are just a few of the elements that make up a community's quality of life (or common community values). The term "quality of life" is a simple concept for the average citizen to discern as it represents the sum of their collective daily experiences. Unfortunately, it is not as simple for planners and transportation professionals to fully incorporate quality of life concerns into decision-making. Any given citizen's opinion about his or her quality of life derives from many dimensions, and it is a true challenge to define quality of life for a community because it is largely driven by community values and perceptions. The following graphic illustrates how transportation can support and influence various aspects of a community's quality of life.

# Quality of Life Common Community Values



**Transportation System**  
supports all aspects of quality of life



## Governance and Public Service

- ♦ Democratic processes that engage citizens
- ♦ Laws and ordinances enacted and enforced to protect community values
- ♦ Well-staffed local police, fire, & emergency services that contribute to a sense of safety
- ♦ Well-maintained physical infrastructure and efficient public services

## Built Environment and Mobility

- ♦ Infrastructure capacity adequate to support the scale of development
- ♦ Development and infrastructure that provide a sense of character and aesthetics
- ♦ Convenient access and proximity to daily needs
- ♦ Transportation choices that are affordable and accessible to all
- ♦ Comprehensive land use and transportation planning to maintain community character and meet present and future needs

## Natural Environment and Resources

- ♦ Air quality that meets or exceeds standards
- ♦ Clean water sources for drinking & recreation
- ♦ Reliable energy sources with strategies to curb carbon emissions
- ♦ Natural resources managed for environmental quality and food production
- ♦ Scenic resources preserved for posterity

## Economy

- ♦ Businesses that support the community and offer opportunities for growth and investment
- ♦ Jobs that pay living wages, accessible job training, and entrepreneurial opportunities
- ♦ Stable property values and equitable taxation

## Housing and Education

- ♦ Mix of attractive, affordable housing types
- ♦ Schools and universities offering high-quality, accessible education

## Social and Cultural

- ♦ Active community groups to program events and promote civic engagement
- ♦ Places to gather and evidence of their use
- ♦ Houses of worship for diverse faiths
- ♦ Arts, music, & other cultural opportunities
- ♦ Preservation of historic & cultural resources
- ♦ Promotion of social equity

## Public Health and Safety

- ♦ Transportation facilities & services for all modes that are safe and reliable
- ♦ Affordable, accessible health care
- ♦ Affordable healthy food choices
- ♦ Well-maintained recreation facilities to promote physical activity, including trails and local parks

Even though current research cannot fully explain how transportation affects each of these categories of quality of life considerations, community members intuitively understand that transportation infrastructure influences/affects most aspects of their quality of life. They may not express it in specific terms that directly link transportation projects or activities to their daily quality of life concerns, but they do understand that without mobility options they are unlikely to meet their financial needs, care for their families, or participate in societal functions that are key to their public health and well-being (see following graphic). The quality of life elements themselves are also interrelated, having effects on each other – the quality of the natural environment affects public health, for example. Beginning to think about transportation as *one essential part* of the interconnected web of the overall community is what defining context is all about.

Consequently, it is the job of the transportation practitioner to continuously seek to understand the connection between transportation and quality of life considerations even if the linkages cannot always be quantified using available

mathematical relationships or models. Ignoring the community's values can result in a bad "fit" of the transportation project or activity within the community, with far-reaching effects on quality of life. The quality of life elements (or community values) therefore comprise the context in which the transportation project should be considered. Transportation is a means to the many ends associated with a good quality of life, and should not be considered an end in and of itself.

### How does the transportation system affect quality of life?



Sally enjoys walking to her local church because it helps her stay active and she saves herself headaches with traffic and parking. Plus, she knows that how often and how far people drive their cars affects local air quality and global greenhouse gas emissions.



When family and friends come to visit John and Sue, they like to show off the newly-renovated bridge in the center of town because it complements the character of the community.



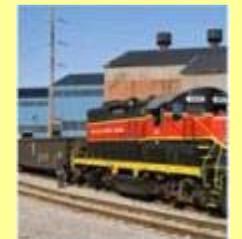
As the Emergency Services Coordinator for the city, Paul is pleased at how emergency response times to the eastern part of town have improved since the new connector road was completed. Before the new road, there was only one way to get from the fire station to those neighborhoods, and the only road was congested.



David's mom has noticed how much more active he's been since he's been walking to his friend's house along the new greenway. Since the greenway is separated from traffic, she doesn't worry as much about safety, and she no longer has to drive him there in the car.



Laura is considering taking a better job across town, but the traffic to get to it would mean she could not pick up her children from daycare before it closes, and she would spend too much on gas. She would like to take a bus, but the closest stop to her house is too far away to walk.



Gary has decided to expand his manufacturing plant by hiring several dozen new employees because business is good, and the freight railroad that his plant is adjacent to provides a reliable, affordable way to ship his goods to customers.

## Transportation and Land Use

One of the areas of renewed interest in planning and project development is the examination of how land use affects mobility, accessibility, and safety as part of alternatives development and analysis on transportation plans or projects. This is opening the door to new and creative solutions to meet transportation needs by leveraging land use policies, growth management strategies and other tools regulating land use and development to better manage congestion and reduce safety concerns. While both transportation and land use planners have long worked together to project future growth scenarios and forecast mobility needs in the future, efforts to integrate transportation and land use planning, such as through the management of land use (including access points) for the benefit of preserving the capacity of roadways, are more recent. With recent cutbacks in transportation funding, local, regional, state, and federal agencies are realizing that they must work together to achieve their goals of creating livable and sustainable communities. The case study presented here is an example of how transportation agencies and local governments can collaborate to develop shared transportation solutions. For more information on the linkages between land use and transportation, [click here](#). Additional information can be found on the [FHWA website](#).

### Route 16 in New Hampshire

Source: "Great Corridors, Great Communities: The Quiet Revolution in Transportation Planning", Project for Public Spaces, 2008  
[http://www.pps.org/pdf/bookstore/Great\\_Corridors\\_Great\\_Communities.pdf](http://www.pps.org/pdf/bookstore/Great_Corridors_Great_Communities.pdf)



**Issues:** Route 16 is New Hampshire's major north-south highway on the eastern side of the state, connecting Portsmouth and the seacoast to the White Mountains and northwestern Maine. In the early 1990s, residents and tourists alike expressed concern over the proliferation of new commercial establishments along Route 16 and the overall deterioration of the scenic integrity of the highway. Safety and congestion along the roadway were also raised as problems. When NHDOT officials realized that the mobility issues on Route 16 (reduced safety, lower vehicle speeds) were inextricably linked to the issues on either side of the road (rapid proliferation of auto-oriented land uses), they knew that their efforts to improve service on the road would fail without the active cooperation of those responsible for making land use decisions.

**Approach:** To start, NHDOT launched regular community meetings, a quarterly newsletter and the establishment of five working groups, and then employed creative communication tools to help town officials, residents, business owners and other interested citizens better understand the issues and possible alternatives along the corridor. NHDOT also worked closely with the four Regional Planning Commissions and local land use boards to understand how local land use decisions affect regional transportation needs—just as transportation improvements alter land values and regional growth. According to Ansel Sanborn, who managed the Route 16 project for NHDOT, the striking results of the study were due to groundbreaking levels of cooperation with local communities. "Once the DOT assumed the role of partner rather than expert, the truly innovative solutions of the study began to emerge," he said. "By spending time talking together about goals that both the DOT and the community shared, we came to agree on better solutions."

**Results:** NHDOT adopted on-road traffic mitigation strategies such as predefining and limiting access points to Route 16 and improving pedestrian, bicycle and transit facilities as a result of this effort. In parallel, many municipalities along the road adopted new land use regulations to reduce traffic generation on Route 16, such as upzoning in commercial nodes, downzoning in between nodes, and encouraging land uses that generate fewer vehicle trips. "The study was both a topical and geographic convergence—bringing together transportation and land use planning as well as state, regional and local players," noted Cliff Sinnott, Executive Director of the Rockingham Planning Commission. "This project got the whole corridor working together."

## ***Context Counts Through All Phase of Transportation***

Often, transportation practitioners in the early phases of transportation decision-making (i.e. Planning, Environmental Review and Preliminary Design) relate well to the concepts of context presented here, because the processes that inform their day-to-day work include the collection of data and information that relate to many of the quality of life considerations presented earlier. However, an understanding of context is equally important for construction, operation and maintenance projects and activities. Since maintenance and operations staff are often in the field, immersed in the context, they can provide valuable perspective on what is needed. From their practical experience, they have insights on what may work and what may not in different communities and environments. This hands-on experience and perspective can provide valuable insights to planners and engineers working on plans and projects.

However, just being in the field does not necessarily result in a complete understanding of the community context, so information on the context gathered during planning and project development is just as valuable to construction, maintenance and operations staff. Often, “understanding the context” during construction, operations and maintenance is reactive—the understanding has evolved over time from citizen or community complaints. The difference with Context Sensitive Solutions (CSS) is that by using interdisciplinary teams, including these disciplines, as projects are planned and designed, the DOT is sharing its knowledge about each individual community’s context. For example, the results of an economic analysis of a project’s impact on adjacent businesses can be very helpful for a construction engineer who needs to work with business owners impacted by detours or construction zones. And information gathered about the high value residents place on a corridor tree canopy can be very valuable for operations engineers concerned about clear zones or maintenance staff responsible for tree trimming. Knowing context information before “hitting the field” can help staff develop a proactive plan for interacting with citizens, avoiding controversy, saving time and building trust with residents and the community.

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## CHAPTER 2: DEFINING “CONTEXT,” THE FOUNDATION OF CSS

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### Section 2.2 - What Questions Should a Practitioner Ask to Define Context in the Six Phases in the Life of a Project?

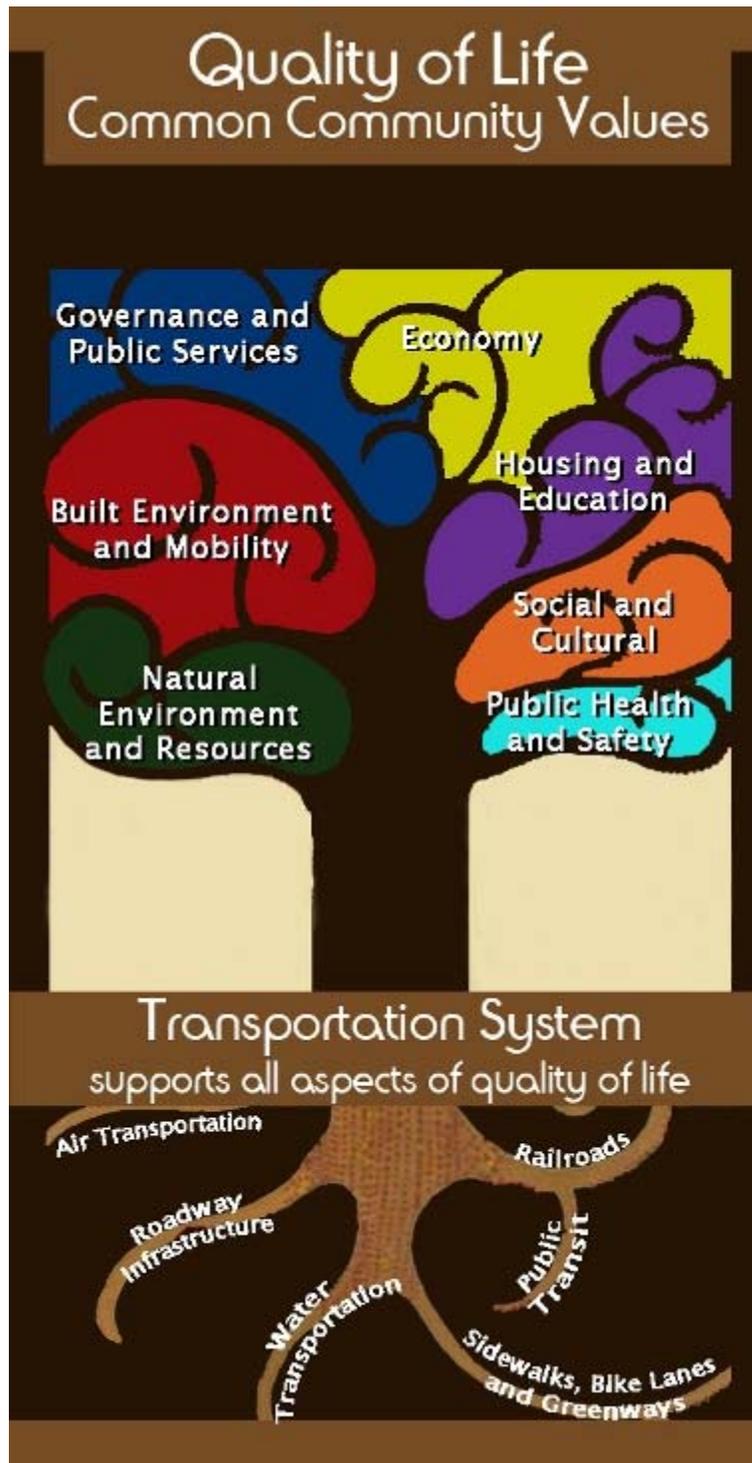
**“If you do not ask the right questions, you do not get the right answers. A question asked in the right way often points to its own answer. Asking questions is the A-B-C of diagnosis. Only the inquiring mind solves problems.”**

**- Edward Hodnett**

Most people intuitively understand that the best way to solve a problem is to ask the right questions, but this is easier said than done. Transportation practitioners know they must collect information that will require inquiry, but they are challenged to comprehensively link transportation investment to all aspects of quality of life because the transportation decision-making process involves **many phases** to carry projects from “cradle to grave”. All the phases of transportation decision-making interrelate by connecting problem identification to a solution that is eventually implemented, operated and maintained. Citizens understand this

connection because they experience transportation through this functional lens, but transportation practitioners often function in silos representative of their phase of work (Policy and Visioning, Planning and Programming, Environmental Studies and Preliminary Design, Final Design and Right-of-way, Construction, and Operations and Maintenance). These silos can create obstacles for practitioners trying to see the bigger picture or context for effective and efficient “cradle to grave” decision-making.

Context is evaluated at different points over the life of a project--practitioners in all disciplines should understand the community context. The context-defining questions that are asked by practitioners in each phase are similar. At all phases of decision-making, they relate to the quality of life values shown in the quality of life tree below.



Some elements of the community's quality of life values are constant; for example, a community's perception of an unacceptable level of service and the importance the community places on aesthetics and visual attractiveness generally do not change, or change very slowly over time. Other elements of the quality of life of a community may be more variable. The important difference for practitioners to understand is in the "scale" of the data, information, or perspectives being solicited. At the visioning or long-range planning level, practitioners are dealing with questions about the transportation system overall (macro-level). The context in these phases, therefore, is defined in terms of the region or city, and its overall landscape. In later phases, such as environmental studies and final design, the context questions cover similar topics to those examined in earlier phases, but in more detail and with a more localized focus. Context questions in these phases might address issues such as specific habitat locations or community concerns over the design of a bridge. In construction, operations and maintenance, water quality and runoff from areas where vegetation may have been removed for construction and protection of areas from intrusion/interference may be important issues. AASHTO's [Compendium of Environmental Stewardship](#)

[Practices in Construction and Maintenance](#) provides a detailed reference on some of the context issues that should be addressed in construction, maintenance, and operations.

During the “cradle” phase of decision-making (Policy and Visioning, Planning and Programming, and Environmental Studies and Preliminary Design), practitioners are more likely to employ standardized data collection methods to understand the conditions in which they are trying to solve a problem or meet a future need. However, the data collection tools and techniques utilized often reflect a narrower perspective (informed by funding, procedural or guidance requirements) than the larger considerations related to quality of life. Therefore, it is critical to ask the appropriate questions at each phase of decision-making to help practitioners wrap their heads around the interrelationships between transportation investment and quality of life goals. While it is impossible to develop a comprehensive list of questions to fully define all aspects of context for every type of project at every phase of decision-making, it is possible to develop questions that start the critical thinking necessary to understand how transportation decisions could affect quality of life considerations. These questions should not be used as a checklist but as a tool to help understand community values and goals as well as to accurately define the context of the problems to be solved by practitioners, working with citizens.

### ***Context-Defining Questions***

#### How to Use the Context-Defining Questions

The questions developed for the six phases of the life of a transportation project have been designed to prompt the appropriate level of thinking by practitioners who are beginning to explore how their decisions might support quality of life interests and needs. The framework for these questions is derived from the quality of life considerations identified in Section 2.1. These questions are not meant to be comprehensive or used as a checklist, but to stimulate critical thinking on the part of practitioners to help translate the potential consequences of their decisions into tangible quality of life outcomes. These questions should open the door to further inquiry with citizens to accurately define problems in a way that reflects citizen values and goals.

While defining context is important for all phases of decision-making, it is most critical to get it right during the first three phases of decision-making. It is during these early phases that the big decisions (which types of investments to make in which locations) that affect the most aspects of community quality of life are being made by practitioners. Defining context during the final three phases of decision-making (final design through operations and maintenance) is also important, to ensure that decisions continue to be made with community quality of life issues in mind and that promises made during the earlier phases are kept. The questions have been developed to be applicable to the appropriate phase of decision-making, such that they resonate with the roles and responsibilities of practitioners working in a particular phase.

[Click here](#) to see a list of sample questions ***practitioners*** should ask when trying to define context.

[Click here](#) to see a list of sample questions ***practitioners*** should ask when trying to evaluate their decision-making processes.

[Click here](#) to see a list of sample questions ***citizens*** should ask during the transportation decision-making process.

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## CHAPTER 2: DEFINING “CONTEXT,” THE FOUNDATION OF CSS

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### Section 2.3 - How Can Different Disciplines Help to Define “Context?”

“Education: Being able to differentiate between what you do know and what you don’t. It’s knowing where to go to find out what you need to know.”

- William Feather  
U.S. author and publisher (1889-1981)

It is impossible for one person to have all the answers; therefore, one of the most important attributes that a practitioner can possess is knowing who can help them define the full context in which they are to facilitate the decision-making process. As mentioned previously, **transportation supports many aspects of quality of life**. Therefore, it is absolutely essential that practitioners consult with other practitioners in multiple disciplines to identify issues of concern related to the components of quality of life, as well as make the critical connections between transportation infrastructure investment and citizen values, interests and needs. It is also critical to solicit input from multiple disciplines to

help identify possible partnering opportunities, because many issues that citizens are concerned with may be managed, owned or operated by agencies or jurisdictions other than that of a particular transportation practitioner.

#### Looking for Information on Different Transportation Disciplines?

Transportation Practitioners come in all shapes and sizes, each bringing his or her own skills, knowledge, and perspectives to transportation decision-making. **This link** goes to a table showing many of the major disciplines of transportation practitioners that may be involved throughout the project development and delivery process. For each discipline, information is included on the educational background, contribution to understanding the context of project, the phases of a project when the discipline is typically actively involved, and examples of practitioners' work.

<u><a href="#">Archaeologist</a></u>	<u><a href="#">Project Manager</a></u>
<u><a href="#">Budget/Finance Professional</a></u>	<u><a href="#">Public Health Professional</a></u>
<u><a href="#">Construction Engineer</a></u>	<u><a href="#">Public Involvement Specialist</a></u>
<u><a href="#">Economist</a></u>	<u><a href="#">Real Estate Appraiser</a></u>
<u><a href="#">Environmental Scientist</a></u>	<u><a href="#">Social Scientist</a></u>
<u><a href="#">GIS Specialist</a></u>	<u><a href="#">Traffic Operations Engineer</a></u>
<u><a href="#">Historian/Architectural Historian</a></u>	<u><a href="#">Transportation Engineer (Design Engineer)</a></u>
<u><a href="#">Land Use Planner</a></u>	<u><a href="#">Transportation Planner</a></u>
<u><a href="#">Landscape Architect</a></u>	<u><a href="#">Urban Designer/Architect</a></u>
<u><a href="#">Maintenance Engineer</a></u>	<u><a href="#">Urban Forester</a></u>
<u><a href="#">Marketing Professional</a></u>	

The first step that any practitioner needs to take when determining which disciplines to consult as part of planning, designing, constructing, operating, or maintaining a transportation project is to use the **context-defining questions** to highlight major areas of concern. Next, the practitioner can connect the **phase of a transportation project to disciplines that can serve in lead and support roles**. In addition, special items that come up as part of the context questioning exercise will point out other disciplines that may be needed to support an effective and efficient decision-making process. Often, project managers serve as the key personnel charged with the responsibility of making sure the right people are at the right place at the right time. When a project manager is leading the process, they are responsible for making sure the appropriate disciplines are engaged throughout the decision-making process. Interdisciplinary teams (IDTs) have been widely accepted as an effective strategy to ensure that all issues are being brought forth early in the decision-making process. The members of an interdisciplinary team each bring a unique perspective on the project that assists in identifying challenges and

opportunities that reflect the complete context.

### **The Role of Project Managers:**

Although project managers (PM) may work in different areas of project delivery, their role is essential and critical as it relates to efficient and effective decision-making (getting projects delivered on time and within budget). A team leader's competency in project management involves integrating comprehensive strategies, technological innovations, production engineering, and internal management. Leaders must be able to establish direction, form alliances, and motivate performance all while optimizing time, cost, procurement, quality, communications, risk, scope, and human resources. Although experience is recognized as the biggest difference-maker in project management, basic academic preparation and training in areas such as technical, managerial, financial, information technology, and legal matters is also seen as fundamental to leadership success.

### ***What is an interdisciplinary team?***

There is no single definition for an interdisciplinary team assigned the task of developing a transportation project with a guiding CSS philosophy. However, the principles of CSS suggest that interdisciplinary teams:

- Fully represent the natural and human context as well as the community's perspective of a good quality of life;
- Have a set of ground rules by which they operate to ensure inclusiveness of ideas;
- Have a transparent, systematic process in place, which allows team members to see how their input is being used to make project decisions – this includes the presence of feedback loops;
- Promote an atmosphere of collaboration which strives toward consensus;
- Exemplify a sense of trust among team members;
- Own the outcome; and
- Use good information-sharing practices.

NCHRP has developed a [synthesis report](#) describing the role of interdisciplinary teams in CSS.

Interdisciplinary teams can be comprised of a combination of internal staff (typically within a state DOT) and external stakeholders. External stakeholders participating most often in interdisciplinary teams are federal and state agencies, and local governments. Community and neighborhood leaders and organizations may also participate, depending on the project.

Interdisciplinary teams are currently most often used for larger projects. Projects requiring Environmental Assessments, Environmental Impact Statements (EIS), or Corridor Studies are the most common type of projects in which interdisciplinary teams are used. Other types of projects that involve interdisciplinary teams include Categorical Exclusions and Feasibility Studies. One quarter of state DOTs surveyed use interdisciplinary teams on all projects (*NCHRP Synthesis 373: Multi-Disciplinary Teams in Context-Sensitive Solutions*). It is important to note that there are benefits of using an interdisciplinary team on smaller projects. Again, it is all about the context. A small project, or even maintenance activity, that might affect an environmentally sensitive area or a strongly felt community resource or value will go much more smoothly if discipline experts or community representatives participate in advance.

Additional Resource: [Appendices B and C, Michigan Department of Transportation Stakeholder Engagement Guidance](#)

## ***How can an interdisciplinary team benefit the project development process?***

Interdisciplinary teams can benefit the project development process in several key ways:

- Improve the understanding of a project context and early identification of community issues. By involving a diverse group in the decision-making process, DOT Project Managers provide themselves a resource to assist in addressing the complexities of defining context for a large project.
- Provide a flexible tool to Project Managers seeking to develop effective and efficient decisions. This flexibility exists in two dimensions:
  - Composition of the team can vary based on the needs and issues of a project. Different talents can be included to reflect each project.
  - Role of the team in the decision-making process can be adapted to each project as well, depending on the composition of the team, the goals of the team, and the stage at which the team is employed.
- Teams can be employed in any of the six phases of project development and delivery, including operations and maintenance. Depending on the scale of the project and the phase, the team can be scaled and adapted accordingly.

In a survey of state DOTs conducted for NCHRP Synthesis 373 (*Multi-Disciplinary Teams in Context Sensitive Solutions*), when asked how interdisciplinary teams affected the project planning and development process, 72% (23 states) responded that it resulted in greater public acceptance. Expedited project delivery (44%, 14 states) and shared funding through partnerships (31%, 10 states) were also mentioned as ways by which interdisciplinary teams affected the process. Some stated that teams delayed project delivery (19%, 6 states). It should be noted that those six state DOTs that answered that multi-disciplinary teams delayed project delivery also indicated that there was greater public acceptance (five states), that is sometimes also expedited delivery (three states), and that there were opportunities for shared funding (two states).

### **Interdisciplinary Team Case Study Examples:**

These case studies provide two examples of the ways that interdisciplinary teams have been used on transportation projects. One is a process established for use on a single corridor being studied; the other is a process developed for system-wide decision-making at a state DOT.

#### **[SR 12 Corridor in Utah](#)**

#### **[Efficient Transportation Decision-Making Program in Florida](#)**

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## CHAPTER 2: DEFINING “CONTEXT,” THE FOUNDATION OF CSS

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### Section 2.4 - Why Consult Citizens as Part of Defining Context?

“Straight from the horse’s mouth.”  
- Unknown

People have used the expression “straight from the horse's mouth” for more than a century to represent the importance of going to the original source to get the truth of the matter. No better quote could summarize the value of having citizens assist with defining context. In order for practitioners to accurately define context they logically need to consult the people that live, work and play in the communities they serve, to fully understand their values, interests and needs. It is also critical for citizens to understand the transportation context such that they can exchange ideas in a way that contributes to developing solutions that solve transportation problems and support a good quality of life. The responsibility of defining context is two-way between practitioners and citizens: one understands the governing laws, regulations, guidelines, procedures, technical and financial implications while the other understands what priorities inform their community quality of life. Together practitioners and citizens can co-create solutions that provide the highest and best value.

Citizen's Guide – The Citizen's Guide serves as a companion to this Practitioner's Guide, with a focus on the roles and responsibilities of citizens within the transportation development process.

[Click here](#) to access the Citizen's Guide.

The proverbial quote, “Where there is no vision, the people will perish,” is accurately reflective of the consequences of working in communities that have no vision.

In order for citizens to be the most effective at communicating their interests and needs, they should have a vision of “what they want to be.” Practitioners need to remind citizens of the critical importance of developing a vision and educate them on how their vision informs the transportation context and, consequently, how transportation problems are defined and solved. **Visioning** efforts typically occur prior to transportation planning and project development, and are often led by other agencies such as local planning departments or agencies focused on economic development. **Section 2.5** contains information on tools that can be used to help define context as part of visioning. In many cases, no visioning efforts have occurred and communities are left wandering aimlessly without direction. This is a challenging situation for practitioners, because they often have very little context to inform their decision-making process. In cases like this, practitioners often rely exclusively on data related to the transportation context. This tactic can lead to decisions that trigger re-do loops, increased project cost, delayed schedules and dissatisfied customers.

While it is true that transportation practitioners should not have to reap the consequences of a vision-less community, it is reality that shapes the outcomes of transportation practitioners' actions. Therefore, practitioners should encourage communities without a vision to develop one as part of the transportation decision-making process. The **SHRP C08 Project** is a valuable source of information on how to do this. This is the first and most important step in defining the context for any project, large or small: one has to know where they are going before they start planning to go there. As an added benefit of starting communities out with a visioning process, it is an excellent risk management strategy. In cases when it is not possible to begin with a visioning process, practitioners should include the identification of information related to community context, values, and goals into their public stakeholder engagement processes.

There are many proven **strategies for involving citizens** in the transportation decision-making process. One of the key

components of ensuring that citizen values are incorporated during all phases of decision-making is to include citizen representation on **interdisciplinary teams**. Several resources are available to help practitioners incorporate citizens into the interdisciplinary team process, including **NCHRP Synthesis 373** and the **SHRP C01 Project**.

Throughout all decision-making, citizen perspectives are “value-added” to the decision-making process. There are a number of excellent stakeholder involvement and engagement guides that have been developed by state DOTs and public involvement experts. While many of these focus primarily on the early phases of transportation decision-making (planning and environmental studies), there are some that provide guidance for the implementation phases. The Michigan Department of Transportation has developed **Stakeholder Engagement Guidelines** that include guidance for all types of departmental projects and activities, including maintenance. The Key Concepts section of the guide defines five levels of stakeholder involvement from informal and informational to formal public engagement. The guide also includes a Stakeholder Engagement Activity Matrix, which identifies the level of stakeholder involvement recommended for various types of projects and activities, including routine maintenance and capital preventive maintenance. In Appendix F, this guide also includes sample public involvement plans for heavy maintenance, capital preventive maintenance, and bridge rehabilitation/repair projects.

*Links to other public involvement and engagement guides are provided below:*

**[Minnesota Department of Transportation, “Hear Every Voice” Public and Stakeholder Participation Guidance](#)**

**[Michigan Department of Transportation, Guidelines for Stakeholder Engagement](#)**

**[New York State Department of Transportation, Public Involvement Manual](#)**

**[Florida Department of Transportation, Public Involvement Handbook](#)**

**[FHWA, Public Involvement Techniques for Transportation Decision-making](#)**

**[Environmental Protection Agency, Tools for Public Involvement](#)**

**[Institute of Cultural Affairs, Technology of Participation courses](#)**

**[International Association for Public Participation](#)**

Another very important resource that practitioners should leverage when trying to consult with citizens is the engagement of **citizen coalition groups**. These groups combine communication skills, social networks, political capital and technical capacity to reach their constituencies. Working with citizen coalition groups can streamline time and money while also providing better input into planning, designing and delivering the highest and best quality transportation solution.

### ***Case Study Examples:***

The case studies presented in this section highlight how citizens have been engaged in decision-making processes.

## Mayor Leads DOT to Cost-Effective Innovative Design Solution Route 206 Bypass in Montgomery, NJ

**Issue:** The Route 206 Bypass is part of a state highway that runs north-south for the entire length of the state of New Jersey. In Montgomery Township, Route 206 serves as a connection between I-287 and the New Jersey Turnpike in central New Jersey. The mayor of Montgomery Township was very concerned about the potential impact of the proposed alignment and design on her township. She began to attend every meeting about the project, raising questions and voicing objections formally and informally, developing relationships with staff at NJDOT, and working with other stakeholders, particularly a citizens' Transportation Advisory Committee and other residents whom the project would affect.



**Approach:** The mayor also asked key NJDOT staff to work with Montgomery Township to revisit the project's alignment using the principles of CSS. Staff suggested some ways to reduce the impact of the project, dropping the design speed of the roadway and reducing the number of lanes from four to two. But it was the mayor who proposed the most significant change: re-routng the southern terminus of the project to reduce traffic impacts on the town. The mayor persisted in presenting this design alternative to DOT staff and leadership at every opportunity.

Recognizing the value of a design that could achieve a better and more cost-effective project, NJDOT's Bureau of Value Engineering, in collaboration with the Division of Project Planning and Development, initiated a "Smart Solutions" process that culminated in an intensive workshop that drew elected officials, planning board leaders and engineers from Montgomery and Hillsborough Townships, Somerset County, NJDOT, and a key member of the New Jersey State Assembly. NJDOT staff presented the original and alternative designs and, with support from Somerset County planners, worked to forge a consensus around support for the new design.

**Result:** As a result, the new alignment proposed by the mayor eliminated two bridges and a cloverleaf interchange, avoided bisecting a neighborhood in a manner that isolated affordable housing, reduced the impact on the environment and local farmland, and prevented the need for NJDOT to purchase additional right-of-way. The result was a project that was less expensive and had less impact on local traffic, neighborhoods, habitat, and farmland. The project is now moving forward with state funding and construction is scheduled to commence in 2010.

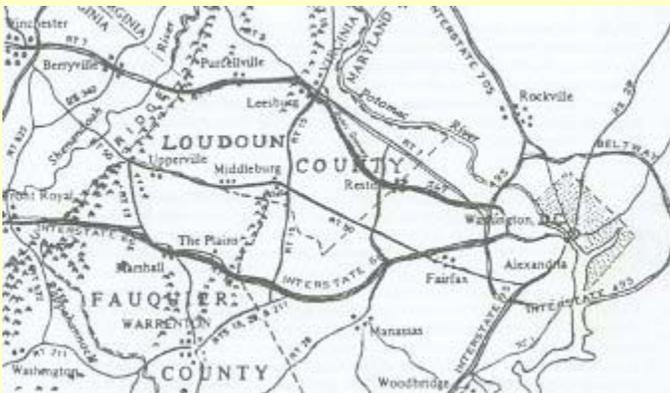
[Click here for more information](#)

## Route 50 Corridor Coalition Develops Solution for 1/10<sup>th</sup> of Original Project Budget Route 50 Scenic Byway, Loudoun and Fauquier Counties, Virginia

Source: SHRP II C08: Linking Community Visioning and Highway Capacity Planning, The Louis Berger Group, 2009.

**Issue:** The Route 50 Corridor Coalition was formed in 1995 after a Town of Middleburg task force worked unsuccessfully to formulate an agreeable community design concept for the proposed Route 50 widening and bypass project through their town. The Route 50 Corridor Coalition intended to pull together residents, business owners, elected leaders, local staff and other interests in the area to conduct a local visioning process to determine the future of the Route 50 corridor in Loudoun and Fauquier counties. The Route 50 Corridor Coalition consisted of citizen and business representatives, nonprofit groups, and governmental agencies (Commonwealth Transportation Board, Loudoun & Fauquier County Governments, Virginia Department of Transportation, the Virginia Department of Historic Resources (SHPO), and the Virginia Outdoor Foundation). The main concern of the coalition was the protection/preservation of the historic, cultural aesthetic character of the communities adjacent to Rt. 50.

**Approach:** The Route 50 Corridor Coalition began researching various alternatives to the proposed DOT design and led visioning and planning process. The result of this process was a 1996 document titled "A Traffic Calming Plan for Virginia's Rural Route 50 Corridor: Aldie, Middleburg and Upperville." This citizen-led action led to a \$13 million congressional allocation in federal funding for the design and construction of traffic calming elements along U.S. 50. The funding allocation required an 80% federal contribution (\$11.4 million) and 20% local/state match (\$2.3 million), which was provided by the Commonwealth of Virginia through VDOT's Virginia Transportation Development Plan. VDOT and the Route 50 Corridor Coalition worked together on this effort, each participating in the Route 50 Traffic Calming Task Force, established to guide the planning process and hire a consultant to conduct the final planning and design for the traffic calming features. The *Route 50 Design Memorandum* was produced in 2003, followed by full construction designs documents for traffic calming elements in locations along the corridor; construction began in 2007.



Route 50 Corridor Map

Source: "A Traffic Calming Plan for Virginia's Rural Route 50 Corridor," pg. ix.

**Results:** The alternative that was ultimately accepted by VDOT and the Citizen Coalition resulted in an estimated 80% cost savings over the original widening and bypass project. The end result was a precedent-setting approach for community collaboration on transportation projects. Lessons were learned by both practitioners and citizens about traffic calming infrastructure and innovative treatments, and the process resulted in new and innovative public involvement efforts for the state DOT, such as the development of a project blog and other tools developed to inform the public of project design and construction progress.

See: Route 50 Corridor Coalition website: [www.route50.org](http://www.route50.org); VDOT project website: [http://virginiadot.org/projects/northernvirginia/route\\_50\\_traffic\\_calming\\_measures.asp](http://virginiadot.org/projects/northernvirginia/route_50_traffic_calming_measures.asp)

### Third-grader Successfully Lobbies for a Safe Mullan Road Bike and Pedestrian Pathway



**Issue:** Elli and her brother and sister knocked on doors along Mullan Road to gather signatures on a petition for the path. "I just wanted to ride to school, ride to Baskin-Robbins, ride to Wal-Mart," Elli said. Elli's wishes converged with those of President Barack Obama, who wanted to jump-start the economy, and County Public Works director Greg Robertson, who wanted to find a quick and easy project that fit the stimulus bill. In spring 2010, construction will begin on an 8-foot-wide paved trail from Cote Lane to Flynn Lane on the south side of Mullan Road. When Elli was 7, she wanted to ride her bike to school, but each day 12,000 cars go by her home. Her parents weren't keen on their daughter biking with speeding sedans. But Elli rode on sidewalks back when the family lived in Austin, Texas, and she wanted to know why there wasn't a sidewalk on

Mullan.

**Approach:** Elli's mother gave her a brief lesson in lobbying one's government and how a petition works. Elli, her sister and her brother knocked on doors until they had more than 75 signatures. Elli submitted the petition along with a cover letter detailing her concerns and reasons for requesting the sidewalk: "1. safety to walk. 2. exercise. 3. kids to visit friends and to go to school. 4. save fuel for cars and buses. 5. people enjoy it. 6. safer for drivers."

**Result:** About the same time, Public Works director Greg Robertson was looking for a project eligible for American Reinvestment and Recovery Act dollars. Criteria were a quick turnaround, a project in the urban area, and one uncomplicated by problems like right-of-way negotiations and extra environmental reviews. The project was selected and applied for funding through ARRA.

*Adapted from: Szpaller, Keila. "Squeaky Wheel: Third-grader successfully makes the case for a safe Mullan Road bike and pedestrian pathway." Missoulian. Posted September 26, 2009. Accessed November 5, 2009. Photo by Michael Gallacher.*

[http://www.missoulian.com/news/local/article\\_82ce5f98-ab21-11de-80db-001cc4c03286.html](http://www.missoulian.com/news/local/article_82ce5f98-ab21-11de-80db-001cc4c03286.html)

## American Kestrel Project, New York State



**Issue:** This project ultimately aims to reverse the decline of American Kestrels in New York State by addressing a main threat to their population, lack of suitable nest sites within appropriate habitat. The American kestrel, members of the Falcon species also known in North America as the Sparrow Hawk, is a small falcon roughly the size of a robin that is widely found in the Americas. They are found throughout New York State, except in heavily forested areas. It prefers to nest in areas surrounded by large open areas with short grasses and other non-woody plants, such as holes in dead trees and rocks.

**Approach:** Audubon New York has partnered with the New York State DOT in its efforts to install kestrel nesting boxes in suitable locations around the state. NYSDOT will be installing a total of five

boxes at various locations in Essex County as part of a statewide program in which NYSDOT is active. In the Buffalo area, nest sites have been selected and box erection will begin soon. In the Syracuse area, partners have been enthusiastically responding and additional boxes are being built. Many identified locations are along state highways where utility poles are being used for mounting.

**Result:** “I’m delighted that our Essex County maintenance forces are taking the opportunity to partner with the Audubon Society to install these kestrel boxes,” said NYSDOT Regional Director Mary E. Ivey. “Here’s a way to see an environmental benefit at virtually no cost.” Jillian Liner, Audubon New York Director of Bird Conservation said, “We are thrilled with this unique opportunity to work with so many Audubon chapters and centers, as well as NYSDOT, to make a real difference for the kestrel. Volunteers across the state will be working in their communities towards a shared goal that will increase our population of breeding kestrels in New York.”

*Sources: Audubon New York, American Kestrel Project website ([http://ny.audubon.org/BirdSci\\_AmericanKestrelProject.html](http://ny.audubon.org/BirdSci_AmericanKestrelProject.html)) and NYSDOT Press Release “NYSDOT Works with Audubon Society Installing Kestrel Boxes,” March 25, 2010. Photo by Tim Baker, NYSDOT.*

## US 285 Corridor in Colorado

**Issue:** The US 285 capacity improvement project examined how to expand a safety-challenged two-lane road into a four-lane highway, through a scenic area. The US 285 corridor is one of two routes to the mountains from the Denver metropolitan area, the other being I-70. As a conduit for recreational traffic, the road is prone to weekend bottle-necks. Slowing recreational vehicles on mountainous slopes and narrow roads offered no room for passing. In addition to recreational use, metro area residents have increasingly settled along US 285 from Foxton Road to Bailey, making it a “bedroom community” of residents who commute to Denver. The need for road widening focused on increasing capacity and safety, with an eye towards these major uses.

**Approach:** The value engineering team met for a week to review alternatives and recommend changes. They also held three public workshops on project design. An interesting turn of events occurred at one of the public neighborhood meetings. “During a public meeting, one of the residents came and said ‘oh they are putting an interchange... I live right there, and I don’t want to see that bridge.’ I said ‘we can come to your neighborhood and have a meeting...’” From the meetings, it was determined that the public did not want this interchange. “We gave them all the data. The majority of the people who were going to use the interchange said ‘no, we don’t want to see it.’”

**Result:** As a result, an entire interchange at Wisp Creek was completely eliminated from the design, reducing the cost and impact of the project.

Source: “Colorado US 285 – Foxton Road to Bailey: Using Context Sensitive Solutions Approaches to Highway Capacity”, [www.transportationforcommunities.com](http://www.transportationforcommunities.com)

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## CHAPTER 2: DEFINING “CONTEXT,” THE FOUNDATION OF CSS

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### Section 2.5 - What Methods, Resources and Tools Can Help to Define “Context?”

In this chapter, practitioners have learned why defining context is important, how practitioners and citizens each play a role in defining it, and how context relates to a community’s quality of life. This section will address the details of how to define context, including providing methods, resources and tools that may help. Because the context of each transportation project is by definition unique, the goal in this section is not to prescribe a predetermined process, but rather to provide a menu of options that the practitioner can choose from as he or she deems appropriate.

Context should be defined during each phase of the “Life of a Transportation Project” (see Section 2.2). The methods, resources and tools presented in this section can generally be adapted to any phase of transportation decision-making and those most relevant to a specific phase are noted. Chapter 3 will also cover in more detail how practitioners can apply what they’ve learned about the context of a project to decision-making.

The two key methods that practitioners need to employ in defining context are gathering input from stakeholders by speaking to people, and collecting and analyzing data, plans, reports, and maps. Both techniques are generally required in some degree to define context during any stage in the life of a project, since a full picture cannot be gleaned from one method alone. The table below identifies a range of sample sources of information that can be used to achieve a solid understanding of the project, listed from simple to complex.

**Sample Methods to Define Context (from simple to complex)**

Collect and Analyze Data, Plans, Reports, and Maps	Gather Input from Stakeholders
Prepare aerial map of project showing at least 100 feet along each side. Take photos on-site of adjacent land uses.	Phone calls to municipal representatives, DOT environmental or resource agency staff, and utilities
Map environmental features in the area (e.g. streams and lakes, floodplains, National Wetlands Inventory, protected open space) or utilize existing maps from resource agencies and non-governmental organizations. Collect Environmental Impact Statements for any nearby previous projects if applicable.	Meeting with resource agency or municipal representatives on site
Map community features, such as special vistas/places, schools, churches, cemeteries, business districts, major public and institutional buildings, and historic districts in the project area. Map low-income and minority populations using Census data.	Small group discussion, conducted on-site using a context tool or checklist
Read Long-range Transportation Plan and analyze Regional Transportation Map to understand the role of the project roadway/bridge in the larger transportation system.	One-on-one stakeholder interviews, conducted on-site using a context tool or checklist
Collect and analyze data on crash history, vehicle types, pedestrian activity, bicycle activity, trip characteristics, trip types, etc.	Series of focus group meetings throughout the project area
Read local or other agency plans applicable to the project area for information about future anticipated context (see suggested types below).	Meeting with regional elected officials

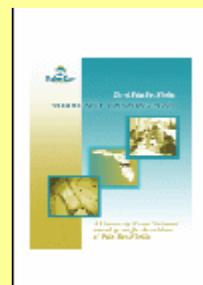
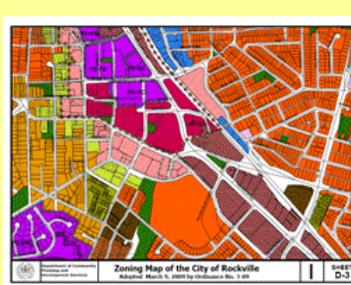
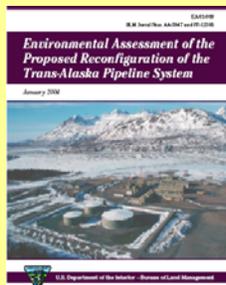
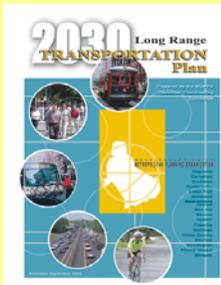
Source: Adapted from the *Smart Transportation Guide* (PennDOT and NJDOT, 2008)

## Collect & Analyze Data, Plans, Reports and Maps

This method involves gathering and taking in information from a number of existing sources. These sources can be very useful in providing ready background information on many topics related to context with minimal effort on the part of the practitioner. The practitioner must be careful, however, not to rely entirely upon existing written documents. In many communities, much has changed since various documents were prepared – in some cases due to rapid growth and development, in others due to a lack of funds to conduct updates at regular intervals. In some communities, these plans may not reflect the positions taken by current elected officials. In any case, documents should be supplemented by personal contact with stakeholders to obtain the most updated information as well as additional perspective on current issues in the project area.

To begin gathering plans and reports, the first stop would be the websites of the municipality, county, state, metropolitan planning organization, and council of government (as applicable). Non-governmental organizations may also have plans or resources available, including environmental conservation organizations, which often develop plans for specific eco-regions or watersheds. The table below lists a broad variety of plans and other documents that may be of use in defining context in various phases of transportation decision-making. In addition, practitioners can glean important information about context from existing policy documents and data on crash history, traffic counts, trip types, etc. that are likely available from the DOT. Basic GIS mapping using readily-available layers such as rivers, lakes, floodplains, wetlands, topography, Census data (for low-income and minority populations) and community features such as schools and churches, can also be a relatively easy way to begin to define context for an area.

### Plans and Other Documents Useful in Defining Context



**Long-Range Transportation Plan (LRTP):** A document that outlines the vision of transportation in a community over the next 20-30 years, and provides direction in terms of implementing individual transportation projects over that period.

Example: Mecklenburg-Union Metropolitan Planning Organization (NC) Long Range Transportation Plan

([http://www.mumpo.org/2030\\_LRTP.htm](http://www.mumpo.org/2030_LRTP.htm))

**Transportation Improvement Program (TIP):** A document that shows which transportation projects will be funded over the next several years (typically 3-7 years).

Example: Illinois Statewide Transportation Improvement Program

(<http://www.dot.state.il.us/opp/stip0609.html>)

**Environmental Impact Statement (EIS):** A document detailing the impacts a project will have on the natural and human environments.

Example: Connecticut DOT Final Environmental Impact Statement/Provisional Section 4(f) Evaluation for Route 2/2A/32 ([http://www.ct.gov/dot/lib/dot/documents/ddotinfo/rt2final/volume\\_1\\_cover\\_and\\_cover\\_sheet.pdf](http://www.ct.gov/dot/lib/dot/documents/ddotinfo/rt2final/volume_1_cover_and_cover_sheet.pdf))

**Environmental Assessment (EA):** On projects where there is not expected to be a significant environmental impact, an EA is developed to document those impacts.

Example: Environmental Assessment of the Proposed Reconfiguration of the Trans-Alaska Pipeline System (<http://www.jpo.doi.gov/Reconfig/Environmental%20Assessment%20for%20Reconfiguration%20of%20the%20Trans-Alaska%20Pipeline%20System>)

**Wildlife Action Plan or Comprehensive Wildlife Conservation Strategy:** Each state is required to develop a wildlife action plan that assesses the health of wildlife and habitats, identifies issues, and outlines necessary actions. *Example:*

*Conserving Alabama's Wildlife – A Comprehensive Strategy*

([http://www.wildlifeactionplans.org/pdfs/action\\_plans/al\\_action\\_plan.pdf](http://www.wildlifeactionplans.org/pdfs/action_plans/al_action_plan.pdf))

**Resource Management Plan (RMP):** An RMP is a land use plan that identifies resource condition goals and objectives; allowable resource uses; areas for limited, restricted, or exclusive use; areas meriting special designations; and management practices and actions to achieve goals and objectives. *Example: Bureau of Land Management, Wyoming, Buffalo Field Office* (<http://www.blm.gov/wy/st/en/programs/Planning/rmps/buffalo.html>)

**Comprehensive Plan:** A document that defines the vision for future development of a community. Comprehensive plans typically cover a wide range of topics, such as land use, transportation, parks and open space, utilities, and public facilities, and usually cover a 20-30 year time frame. *Example: Village of Sussex (WI) Comprehensive Plan 2020*

(<http://www.village.sussex.wi.us/2020ComprehensivePlan.php>)

**Land Use Plan:** A document that defines the vision for future land uses in a community. Many communities do not have a standalone land use plan, including land use within a broader comprehensive plan, but some may have a land use plan with more detail than the comprehensive plan or may only have a land use plan rather than a full comprehensive plan.

*Example: Spring Lake Area (NC) Detailed Land Use Plan* (<http://www.co.cumberland.nc.us/planning/downloads/SpLkLUP.pdf>)

**Zoning Ordinance or Unified Development Ordinance (UDO):** A local ordinance that determines the allowable use of land within a community, including type, bulk, and height restrictions. Some communities combine the zoning and subdivision ordinances into a Unified Development Ordinance (UDO). *Examples: City of Rockville (MD) Zoning Ordinance*

(<http://www.rockvillemd.gov/zoning/>); *Wake County (NC) Unified Development Ordinance*

([http://www.wakegov.com/NR/rdonlyres/030C33DC-5097-4A46-8B1B-7896044B485F/0/adopted\\_wakecounty\\_udo.pdf](http://www.wakegov.com/NR/rdonlyres/030C33DC-5097-4A46-8B1B-7896044B485F/0/adopted_wakecounty_udo.pdf))

**Subdivision Ordinance:** An ordinance specifying the standards to be used in developing sewers, streets, water lines, and other infrastructure in subdivisions, and establishing procedures for approving development actions. *Example: St. Louis County (MO) Subdivision Ordinance*

(<http://www.co.st-louis.mo.us/plan/Subdivision/>)

**Corridor Plan:** A document outlining potential improvements along a specific section of a highway, or along a set of parallel facilities. Can include transportation, land use, and other elements. *Example: South Lyndale (Minneapolis, MN) Corridor Plan*

(<http://www.ci.minneapolis.mn.us/cped/south-lyndale.asp>)

**Strategic Plan:** A document outlining action items intended to reach a short-term set of goals and objectives. *Example:*

*Miami-Dade County (FL) Strategic Plan* (<http://www.miamidade.gov/stratplan/>)

**Neighborhood Plan, District Plan, or Small Area Plan:** A document that provides guidance on the development of a specific area within a community. *Example: Sheridan Station Area Plan (CO)*

(<http://www.denvergov.org/StationAreas/SheridanStation/tabid/395252/Default.aspx>)

**Vision Plan or Vision Statement:** A document that contains high-level goals intended to guide planning and development within a community. *Example: City of Palm Bay Visioning Plan*

(<http://www.palmbayflorida.org/growth/land/public/visioning.html>)

**Economic Development Plan:** A document outlining a community's strategy for attracting and retaining local employment. *Example: Richland (WA) Economic Development Plan* (<http://www.ci.richland.wa.us/ed/index.cfm?pagenum=67>)

**Capital Improvement Plan (CIP):** A document outlining both short and long-range physical development needs. CIP works as a link between a local government's comprehensive plan and fiscal plan. *Example: City of Houston (TX) Capital*

Improvement Plan (<http://www.houstontx.gov/cip/index.html>)

**Data Inventory:** A document or database showing the location of specific natural and human environmental resources, such as historic buildings, wetlands, endangered species, scenic locations, and hazardous chemicals. *Example: Durham County (NC) Historic Architecture Inventory* (<http://www.durhamnc.gov/departments/planning/hi.cfm>)

**Assessment/Auditing Tool:** A tool or methodology that allows objective and/or subjective measurement of different facilities and features in a community. Examples include safety audits, wellness assessments, visual quality assessments, needs assessments, and level of service methodologies. *Example: FHWA Road Safety Audits* (<http://safety.fhwa.dot.gov/rsa/>)

### **Gather Input from Stakeholders**

Speaking to stakeholders, over the phone or in person, individually or in groups as applicable to the project, is an essential part of defining context during any phase of a transportation project. Stakeholders typically have detailed information and insight about a particular project location that may never appear in a written document. There are a number of existing “tools” (typically checklists or forms) that assist practitioners in guiding discussions with citizens to define context. Implementing the tools requires direct engagement of practitioners with citizens, rather than simply holding a public meeting and speaking to those who attend. Direct engagement should include even more than face-to-face conversation, involving techniques to help people visualize what is being discussed. Some DOTs gather public input through direct solicitation or through surveys, for example a survey on satisfaction with maintenance practices.

To assist practitioners in engaging stakeholders, [click here](#) for a table that contains summary information and web links for many tools that could be used to define context. The tools table is broken into three categories, as follows:

- *Project-Based Tools for the Environmental Studies, Construction, Operations and Maintenance Phases.* These tools were created for the specific purpose of evaluating context and potential impacts to the natural environment and human environment for a transportation project, and are thus most applicable during the Environmental Studies phase (the project development phases are described in detail in [Chapter 3](#)). They are also generally applicable to the Construction, Operations and Maintenance phases, although some of the questions and items on the checklists may not be relevant during those phases and should be skipped.
- *Community-Based Tools for Policy, Planning and Programming Phases.* These tools focus on identifying needed improvements in a community, and are therefore more applicable during policy, planning and programming. During those three phases, ideas for overall solutions to transportation deficiencies are being generated and prioritized, so having tools to help identify deficiencies and opportunities for improvements is critical to assisting the practitioner. Some of the tools also identify land use patterns that are inconsistent with encouraging bicycle, pedestrian and transit activities, and as such can be used as input to comprehensive and land use planning undertaken by local governments, which will impact the transportation and land use relationship. In addition, they are relevant to the Policy phase in that the deficiencies and opportunities identified by the tools can assist in setting general policy direction.
- *Toolkits and Resource Sets.* The toolkits and resource sets are a wealth of information for practitioners who are defining context and are generally applicable to most phases of the project development process (exceptions are noted in the table). They include tools and ideas to help engage stakeholders, reach out to low-income and minority populations, and general sources of data and mapping information.

Two particularly useful tools to help practitioners define context for a specific transportation project are described in detail below. Practitioners are encouraged to look through the available tools and resources, then design or adapt their own tools based on what others have done and their own needs. For example, see the [Tennessee DOT’s adaptation](#) of the first tool described below.

### ***Community Context Audit (PennDOT)***

PennDOT developed the six-page Community Context Audit to be performed early in the transportation planning process as part of project identification in order to provide necessary documentation for supporting development of a project's purpose and funding allocation. The information gathered is used to define the purpose and need of the proposed transportation improvements based on community goals and objectives and local plans for development.

The Audit form itself is divided into five sections, which walk the practitioner through identifying various community characteristics that make each transportation project location unique to its residents, businesses, and the general public by considering the community's history or heritage, present conditions, and anticipated future conditions. The Audit is meant to function as a sort of checklist, to remind practitioners to address each area. Some of the pieces can be filled in through research of available plans and documents, but most will need to be obtained through discussion with stakeholders, particularly to identify the level of importance to attach to each characteristic. Excerpts are provided below, please [click here](#) for the full document.

**Section 1** focuses on land use, cultural, historical and natural features. Note that the form asks for the current presence as well as the present and future importance of the characteristic. In this manner, practitioners can identify the most important characteristics to the community, upon which they need to focus the most.

**Section 2** focuses on infrastructure other than the main roadway, particularly related to bicyclists, pedestrians and transit. Attention is placed on identifying both the presence of the infrastructure as well as its current condition and adequacy.

**Section 3** addresses neighborhood culture, aesthetics and street amenities. While many of these items are not often considered as part of a transportation project, they can have significant importance to the community and how they view their transportation facilities.

**Section 4** focuses on economic development, addressing current and expected efforts in addition to the economic development expectations of the transportation improvement itself. Questions also address larger city-wide and regional concerns such as sprawl and redevelopment.

**Section 5** addresses community planning, including specific plans that may address the project area. Issues of regional significance and coordination/cumulative impact with other planned projects are also addressed.

## ***Community Effects Considerations (Adapted from Florida DOT Socio-Cultural Effects Considerations)***

Similar to the PennDOT Community Context Audit tool, Florida DOT's Community Effects Considerations tool asks the practitioner to answer a series of questions to ensure that all angles of potential community impacts from the project have been addressed. Unlike the PennDOT tool, the FDOT tool focuses on larger-scale social impacts that are more relevant to major transportation projects. The tool presents a series of questions under seven headings; for each question, suggested data sources and key analyses are listed to assist the practitioner in answering the question.

An outline of topics covered by the tool is provided below, please [click here](#) for the full document.

### ***Socio-Cultural Considerations***

*Changes in Demographics*

*Community Cohesion*

*Compatibility with Community Goals and Issues*

*Cultural/Historic Resources*

*Spiritual/ Religious Practices*

### ***Economic Considerations***

*Effect on Business*

*Traffic Levels*

*Traffic Patterns*

*Special Needs Patrons*

*Business Visibility*

*Regional Employment*

*Tax Base/Property Values*

### ***Mobility/Access Considerations***

*Bike/Pedestrian*

*Transit*

*Transportation- Disadvantaged Populations*

*Parks*

*Public Services*

*Connectivity: Intermodal, Land Uses*

*Vehicular Mobility*

### ***Land Use Considerations***

*Land Use Patterns/Urban Form*

*Compatible with Local Land Use Plans*

*Indirect and Cumulative Effects*

### ***Sensory/Aesthetic Considerations***

*Noise/Vibration*

*Physical Intrusions*

*Viewshed*

*Compatibility with Aesthetics/Community Focal Points*

### ***Safety Considerations***

*Vehicular Safety*

*Bike/Pedestrian Safety*

*Emergency Response*

*Crime*

*Health*

### ***Displacement Considerations***

*Residential/Non-residential*

*Business and Farms*

*Relocation Sites*

*Community Focal Points*

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## CHAPTER 3: SHAPING TRANSPORTATION DECISIONS

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### Summary

*In order to understand how community context and stakeholder collaboration fit into the transportation process, it is necessary to understand how the process works.*

- *The standard method for dealing with transportation problems is to define the problem, analyze potential solutions, implement a selected solution, and measure the outcome. Decisions are made throughout this process, and are driven by the context that is defined by decision-makers and stakeholders.*
- *Decisions are made during each phase of the life of a transportation project, and the roles and responsibilities of practitioners, stakeholders, and decision-makers vary from phase to phase.*
- *The project delivery process (Phases 1-5 of the “Life of a Transportation Project”) is a progression of decisions that leads up to the opening of a new or improved transportation facility. Operations and Maintenance, on the other hand, are on-going processes that pick-up where project delivery leaves-off. The issues faced and decisions made in this final phase of the life of a transportation project have some unique characteristics that need to be addressed.*
- *There are many existing standards and guidelines that transportation practitioners use in making recommendations and decisions. These standards and guidelines are especially important in the design phases (Phases 3 and 4), and the Operations and Maintenance phase (Phase 6). Many of these guidelines are developed to allow flexibility in design, to meet the needs presented by a specific project context, requiring practitioners to use professional judgment.*
- *Two major factors in transportation decision-making are typically outside the control of state Departments of Transportation: laws, regulations, and funding requirements created or implemented by other government agencies; and local land use and land planning decisions.*

#### Section 3.1 - How do we Make Decisions?

#### Section 3.2 - What are the Processes and Products for Each Phase of Project Development and Delivery?

#### Section 3.3 - What is the Difference between Project Development/Delivery and Operations and Maintenance?

#### Section 3.4 - What are the Controlling Factors in Transportation Decision-making, and How is Professional Judgment Exercised as Part of the Process?

#### Section 3.5 - What Aspects of Decision-making are Outside of DOT Authority?

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## CHAPTER 3: SHAPING TRANSPORTATION DECISIONS

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### Section 3.1 - How Do We Make Decisions?

**“It’s in your moments of decision that your destiny is shaped.”**

**- Anthony Robbins**

Transportation decision-making is complex. It requires practitioners to synthesize and evaluate information about transportation needs, natural resources, community values and needs, and when done well, requires integration with a wide variety of related decision making processes. Just the data inputs—quantitative and qualitative—are daunting. Add to that the number of formal and informal participants with different goals and different agendas and it is amazing that transportation professionals ever get resolution and move on to implementing transportation improvements. However, decisions do get made, so clearly

practitioners must be able to work their way through the challenges. How do they do it?

This guide has outlined the phases of decision making—Policy and Visioning through Operations and Maintenance. These phases describe the process practitioners go through, but they do not help our understanding of how practitioners collect, evaluate and synthesize the the diverse range of inputs to find the “right” solution—the solution or alternative that balances transportation, the environment and the community as envisioned in the CSS principles.

Every person makes hundreds of decisions, large and small, every day. Whether we are deciding what to wear to work or eat for breakfast, or whether or not to change jobs or buy a new house, most people follow an intuitive decision making process based on defining the problem, setting decision making criteria, identifying and analyzing potential solutions, selecting the best solution and implementing that decision.

#### **A Simple Decision Making Example: What Should I Wear Today?**

**Define the problem:** It is a work day and you need to get dressed appropriately and out the door on time.

**Set criteria:** You are running late and you need to get out the door as quickly as you can. What do you have that is clean and will look professional for the meeting you have with your boss today?

#### **Identify and analyze solutions:**

Solution 1: Your standard “executive meeting” white shirt and black pants

Analysis: The shirt is dirty

Solution 2: Your black pants with a yellow shirt

Analysis: The yellow shirt needs to be ironed and you don't have time if you are going to get to work on time

Solution 3: Your blue pants with a blue shirt

Analysis: It is clean, no-iron material, matches and looks professional

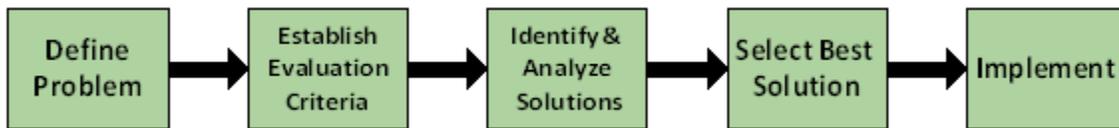
#### **Select best Alternative:**

Solution 3!

#### **Implement**

Get dressed and out the door on time

In a simple form this decision making process can be represented by the graphic below



In fact, this thought process is at the heart of transportation decision making. The names on this simple graphic can be changed to describe the major steps in the NEPA and Long Range Planning processes:

**Environmental Studies (NEPA):**



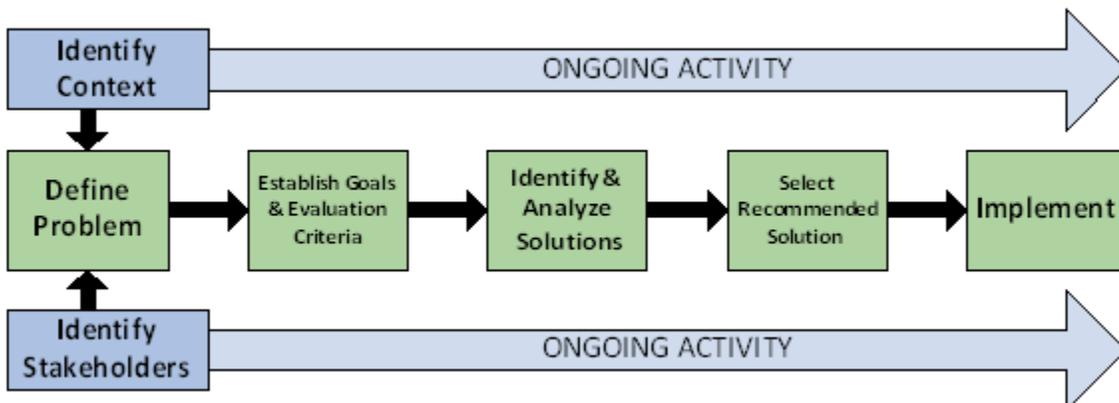
**Long-range Planning:**



While practitioners recognize this thought process, they know that in today's complicated world of transportation decision-making, it is not as simple as choosing solution 1, 2 or 3. It was hard enough for practitioners to identify and evaluate solutions when the only goal was finding the transportation improvement that was cost effective, safe and provided the right level of mobility and access. In today's world, however, transportation professionals have more to juggle and balance than just finding the right engineering solution. With or without collaboration with stakeholders and partners, there are laws and regulations that require practitioners to integrate social, community, and environmental considerations into their decision-making processes. Practitioners don't have to collaborate—it is just easier and faster to make lasting decisions that meet customers' needs when they do.

If practitioners are going to collaborate with citizens, how does it affect our these decision making steps? What changes?

**Collaborative Decision-making Process**



The most visible change is that practitioners need to start by understanding the full scope, or context of the problem, not just the transportation problem. In addition, practitioners need to know the individuals, groups, and agencies that need to be invited to participate in a collaborative decision making process. These added components—identifying the right people to participate and working on scoping the problem together is the most important difference between the traditional transportation problem solving process and a CSS approach. If we get the right people and practitioners talking, listening, and working together before the problem is even formally defined, everyone starts on the same page and it sets the foundation for collective and creative problem solving that is at the heart of CSS.

The rest of the picture looks the same—is it? No, it is not. Each step of decision making changes when it is conducted collaboratively.

### **Define the Problem**

In the collaborative process, problem definition becomes broader. It is not just about the transportation problems. The purpose is to have a discussion of the transportation, community and environmental issues and concerns in the geographic area—the planning area during long range planning, a study area in NEPA, or the project limits and adjacent land during construction. For Maintenance and Operations, understanding the context is more “programmatic”—since these functions work with communities and citizens routinely and often on a face-to-face basis, practitioners develop a working knowledge of the community and natural context. To the extent that scheduled Operations and Maintenance improvements have characteristics like typical projects, practitioners should solicit input from the local government staff to identify potential opportunities to coordinate activities. [Chapter 2](#) provides more information on how to define context.

### **Establish Goals and Evaluation Criteria**

This step is where the groundwork for collaborative decision-making is laid. Goals and evaluation criteria drive the rest of the decision making process, so they must represent the broad range of issues and interests reflected in the problem definition for transportation, the community and the environment, or the decision-making process will be skewed. If collaboration is to succeed, practitioners and citizens must agree on the goals that will serve as the foundation for decision-making. If there is full collaboration, stakeholders and citizens will be invited to participate in establishing evaluation criteria that will drive the decisions.

### **Identify and Analyze Solutions**

Citizens and stakeholders know their community better than anyone else. Since they live and travel throughout the community daily, they intuitively know the transportation challenges and they can provide insight necessary to understand potential trade-offs between transportation solutions and their quality of life values. Often, citizens can provide a solution that is not obvious to transportation professionals. Their experience in moving throughout the region or corridor gives them an advantage over the technical data that practitioners rely upon. They can also provide qualitative data and perceptions that are needed to explore some of the quality of life elements that are more difficult to evaluate with quantitative data and analyses.

### **Select Recommended Solution**

Anyone who has been involved with selecting a recommended solution for a significant transportation plan or project knows that it can be very difficult. Practitioners would love to find a tool, method or technique that would simply take all the input data, analyze it and spit out the “right” answer. Unfortunately, every practitioner also knows that there is no silver bullet for figuring out the right answer, particularly if there are competing or conflicting goals and opportunities. The key to this step of decision-making is bringing all the partners and stakeholders to the table to understand the wide range of information, listen and explore the perspectives of everyone, discuss the trade-offs and the opportunities of the alternatives under consideration, and achieve consensus on the solution that will optimize benefit across the full range of evaluation criteria established earlier. This is not easy, even for small area plans or relatively small and uncomplicated projects. [Chapter 4](#) of this guide provides some suggested tools and techniques that can help with this step.

## Implement

Once the final solution is agreed upon, it is essential that the implementing practitioners—those in final design, right-of-way, construction, and in some cases operations and maintenance—honor the collaborative decision-making. Fulfilling commitments is one part of this. In addition, citizens and stakeholders should be kept informed of progress of the implementation. Implementing practitioners should continue the partnership with citizens and stakeholders who are directly impacted by the implementation.

The Strategic Highway Research Program 2 (SHRP2), administered by the Transportation Research Board, has conducted research to define a national best practice for collaboration with stakeholders and partners during Long Range Planning, Corridor Planning, and NEPA/permitting. The result of this study is the “Transportation for Communities: Advancing Projects through Partnerships” (TCAPP) website, [www.transportationforcommunities.com](http://www.transportationforcommunities.com). This website provides practitioners and stakeholders with “how-to” guidance and a wealth of resources to support collaboration during transportation decision making.

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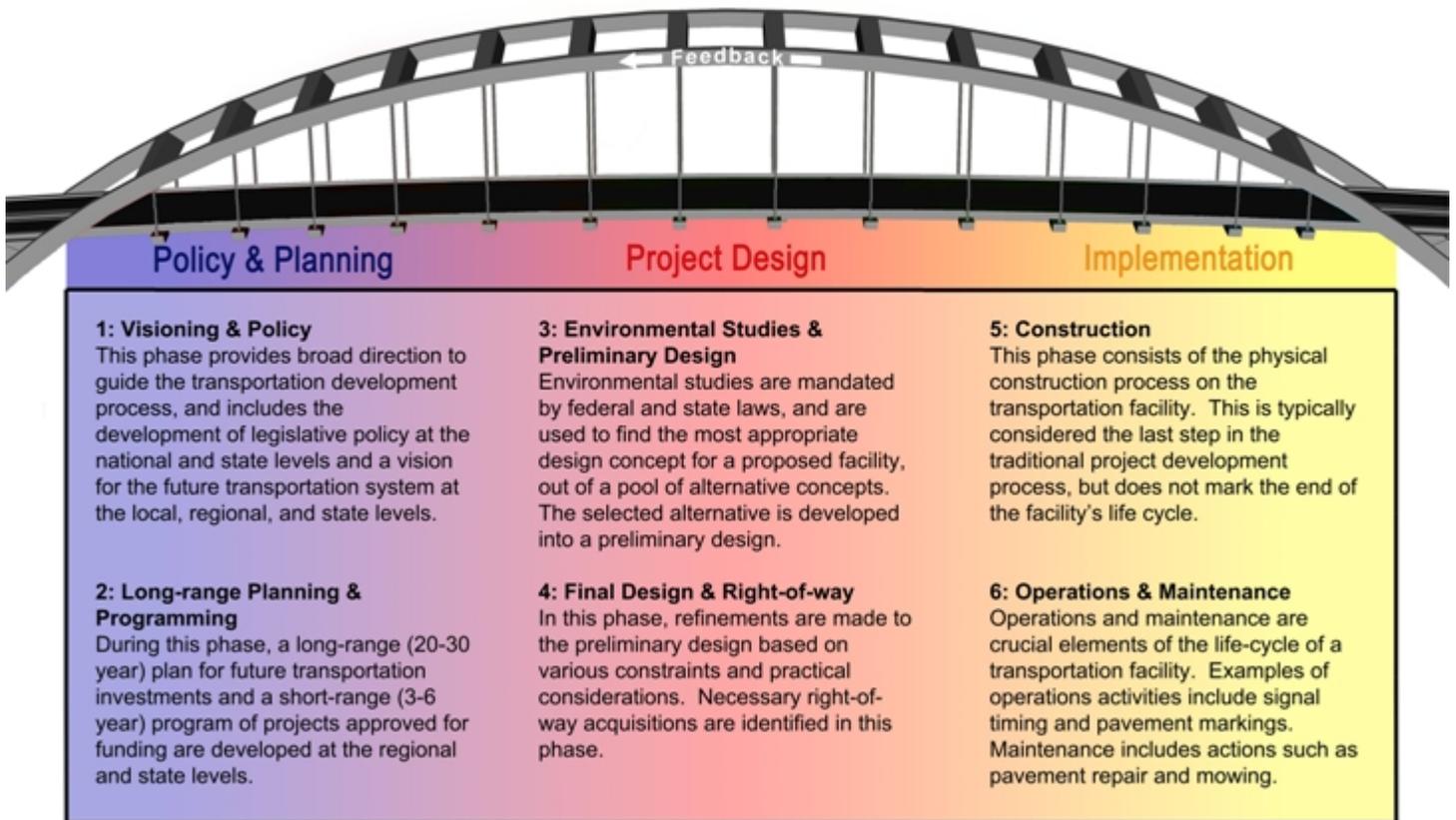
## CHAPTER 3: SHAPING TRANSPORTATION DECISIONS

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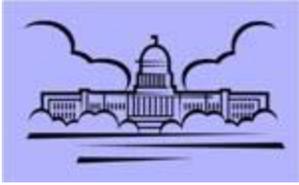
### Section 3.2 - What Happens During Each Phase of Project Development and Delivery?

The transportation decision-making process, for the purposes of this Guide, is comprised of six major phases, beginning with big picture national and regional discussions about policy, long-range planning and programming. Once an individual project is selected to receive funding (“programmed”), it moves forward into the preparatory phases of environmental studies/ preliminary design, final design and right-of-way acquisition. Finally, the project moves into physical implementation with construction, operations and maintenance. This process can take many years, and in one sense is never-ending since operations and maintenance are ongoing activities throughout the time the facility is in use. The graphic below illustrates how the six phases are related.

#### LIFE OF A TRANSPORTATION PROJECT



Knowledge about these phases is critical for an accurate understanding of the complex process that is undertaken by the DOT and other agencies in order to move an idea to on-the-ground reality. Citizens can benefit from an awareness of the process to better understand when and where to become involved, and what constraints are faced by DOTs in making decisions at various phases. Practitioners can benefit from understanding phases of the project in which they are not directly involved, and how they can collaborate with citizens and their fellow practitioners at each phase of decision-making.



## **Phase # 1: Visioning and Policy**

### **Why is this phase important?**

The decisions made during this phase provide the foundation for all other phases of the transportation development process. At the national and state levels, decisions made during this phase include policy items such as the funding allocations for different types of projects and the definition of procedural requirements for state departments of transportation (DOTs) and metropolitan planning organizations (MPOs) to follow. At the local and regional levels, the decisions made during this phase typically involve the vision for the future transportation system and what types of improvements should be considered as potential solutions. At the local/regional level, this visioning is often generated as a result of a process using charrettes, workshops, and other public involvement techniques.

### **Who are the decision-makers in this phase? What are the roles of practitioners and citizens?**

Decisions in this phase are usually made by elected officials, such as members of the U.S. Congress, state legislatures, and city/county councils. Practitioners and citizens both have an advisory role at this phase. Citizens provide input to their elected officials through public comments, hearings, petitions, involvement in special interest groups, and the ballot box; practitioners provide technical advice to elected officials, and are tasked with interpreting and implementing the policies that are adopted.

### **How is this phase connected to other phases of the transportation development process?**

The policies that are set during this phase should guide the decisions made in all other phases of the life of a transportation project. Specifically, decisions made in this phase will influence the process followed in conducting the other phases, the funding available for projects, and the types of considerations that must be addressed (e.g. environmental, multi-modal, etc.).

For more information on Phase #1, [click here](#).



## **Phase # 2: Long-range Planning and Programming**

### **Why is this phase important?**

This is the phase when decisions are made regarding what projects should or should not be advanced to the following phases. Criteria used in this decision-making include estimated costs and benefits, perceived need, and accordance with adopted policies. During long-range planning, decisions are made regarding the multi-modal transportation improvements that will be made within a community for the next 20 to 30 years. Decisions are made about which specific transportation projects will receive funding within the next 3 to 6 years through the programming process. The long-range plan and short-range program determine which transportation projects will be pursued in order to address the needs of the community.

### **Who are the decision-makers in this phase? What are the roles of practitioners and citizens?**

There are two main layers of decision-making at this phase of transportation decision-making. In urban areas, the Metropolitan Planning Organization (MPO), which is a regional body governed by a board of local and state officials, develops both a Long-range Transportation Plan (LRTP) and a Transportation Improvement Program (TIP) for their area. State Departments of Transportation (DOTs) also develop LRTPs and TIPs at the state level, with decision-making authority typically vested in a state transportation board or commission. Local areas that lie outside MPOs may work directly with the state DOT to incorporate their project needs into the state plan, or may work through a Rural Planning Organization (RPO) to do so,

based on state law or policy.

Collaboration between practitioners and citizens/stakeholders begins during this phase. Information about the community values, vision and goals should be the foundation of the MPO's LRTP. **Community context information** should be gathered from existing plans or solicited during stakeholder involvement (including workshops, public comment periods, hearings, and focus groups). **Interdisciplinary teams** of practitioners are involved in the technical aspects of this phase, including data collection, land use forecasting, traffic modeling, analysis of transportation deficiencies and solutions, and fiscal analysis.

### **How is this phase connected to other phases of the transportation development process?**

Long-range planning marks the point in the process where project concepts are identified and confirmed as desirable solutions to meet transportation needs. During programming, priority project concepts are approved for funding, and may advance into environmental review and preliminary design. Decisions made in this phase are based, in part, on the policy guidance provided in the previous phase. Information gathered in this phase is typically used during the environmental study and preliminary design phase, and may also be useful during the operations and maintenance phases. Information from planning and programming is also fed back to the policy and visioning phase.

For more information on Phase #2, [click here](#).



## **Phase # 3: Environmental Studies and Preliminary Design**

### **Why is this phase important?**

This phase marks the beginning of the detailed planning and design process for individual projects (as opposed to the regional and statewide plans developed in Phase 2). Environmental studies are required by federal law on projects that use federal funding; many states also require environmental studies on projects using state funding sources. These environmental studies examine multiple potential transportation improvement alternatives that would meet the purpose and need of a project and determine the best conceptual solution. A preliminary design is developed for the solution that is selected as a result of the environmental study process. Often, functional or even preliminary designs are prepared for multiple alternatives, to help evaluate the pros and cons of possible solutions.

### **Who are the decision-makers in this phase? What are the roles of practitioners and citizens?**

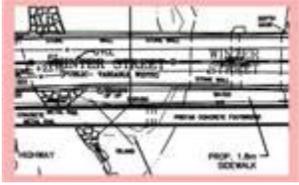
Many agencies have decision-making roles within the environmental study process, including the Federal Highway Administration, Federal Transit Administration, State DOT, MPO/RPO, U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, Environmental Protection Agency, National Park Service and U.S. Forest Service, Bureau of Land Management, Bureau of Indian Affairs, Native American tribes, and state regulatory agencies. Transportation practitioners play a major role in this phase, due to the technical nature of the decisions being made—the technical analysis provided by practitioners largely drives the decision-making at this phase. Collaboration with citizens is also a key element of this phase, with the information provided by citizens serving as an input both to practitioners and decision-makers. While many DOTs use workshops or hearings as a primary technique to gather stakeholder input, there are many **innovative and creative methods and techniques** for engaging and collaborating with citizens and stakeholders during this phase of decision-making. For many projects, both practitioner and community expertise should be included on an interdisciplinary team.

### **How is this phase connected to other phases of the transportation development process?**

Information developed during long-range planning on the purpose and need for the project and potential solutions analyzed at that time should be carried forward into this phase. Information on the policies and goals developed in Phase 1 should also serve as a guide during this phase. The preliminary design developed in this phase is forwarded to the next phase, Final Design and Right of Way, for further refinement before construction can begin. Agreements made during this phase on specific design elements should be carried forward to both the construction and operations/maintenance phases. Information on the selected alternative is fed back to the planning and programming phase, to inform the development of

plan or TIP updates and/or amendments.

For more information on Phase #3, [click here](#).



#### **Phase # 4: Final Design and Right-of-way**

##### **Why is this phase important?**

During this phase, the design of the transportation facility is refined based on various constraints, including further minimization of impacts on environmental resources, unforeseen field conditions, construction phasing, and cost factors. The final design provides detailed information to the construction crew on the precise specifications of the facility. The right-of-way necessary for construction of the project is also acquired during this phase, either through negotiated purchase agreements, easements, or the use of “eminent domain” (condemnation).

##### **Who are the decision-makers in this phase? What are the roles of practitioners and citizens?**

Practitioners, including right-of-way agents, engineers/designers, and planners at the implementing agency, are the primary decision-makers in this phase. High-level decisions involving policy are typically made prior to this phase, leaving primarily technical issues to be decided. Citizen/stakeholder involvement includes the opportunity for citizens to provide input on final design details such as aesthetics or landscaping.

##### **How is this phase connected to other phases of the transportation development process?**

This phase continues the design work begun in previous phases and feeds it directly into the construction phase. Information on agreements made during this phase should be documented and moved forward to the construction, operations and maintenance phases for implementation.

For more information on Phase #4, [click here](#).



#### **Phase # 5: Construction**

##### **Why is this phase important?**

During this phase, the project is physically constructed.

##### **Who are the decision-makers in this phase? What are the roles of practitioners and citizens?**

Implementing agencies, such as state DOTs, transit agencies, and local governments, are responsible for establishing rules to govern the bid and selection process for contractors, and to provide oversight of the construction process. Citizen ability to influence the overall construction phase is limited, but practitioners responsible for this phase need to engage with citizens to provide up-to-date information and solicit concerns in order to minimize the disruption to businesses or residents during the construction phase.

##### **How is this phase connected to other phases of the transportation development process?**

This phase represents the culmination of the previous phases, resulting in a constructed facility that is open to serve its users.

For more information on Phase #5, [click here](#).



## **Phase # 6: Operations and Maintenance**

### **Why is this phase important?**

Operations and maintenance are key phases within the life of a transportation facility, but are often overlooked by both practitioners and citizens, who focus more on planning and building projects. Operations consists of activities that attempt to improve the efficiency and overall safety of existing transportation facilities. Examples of operations activities include signal improvements, pavement marking improvements, and signage improvements. Maintenance activities ensure that existing transportation facilities (for DOTs, primarily roads) are preserved and enhanced over time. Example activities are roadside mowing/landscaping, pavement repairs, snow clearing, and drainage system upkeep. This phase ensures that the investments made in the construction of new and improved transportation facilities continues to reap benefits over the course of the facility's lifespan.

### **Who are the decision-makers in this phase? What are the roles of practitioners and citizens?**

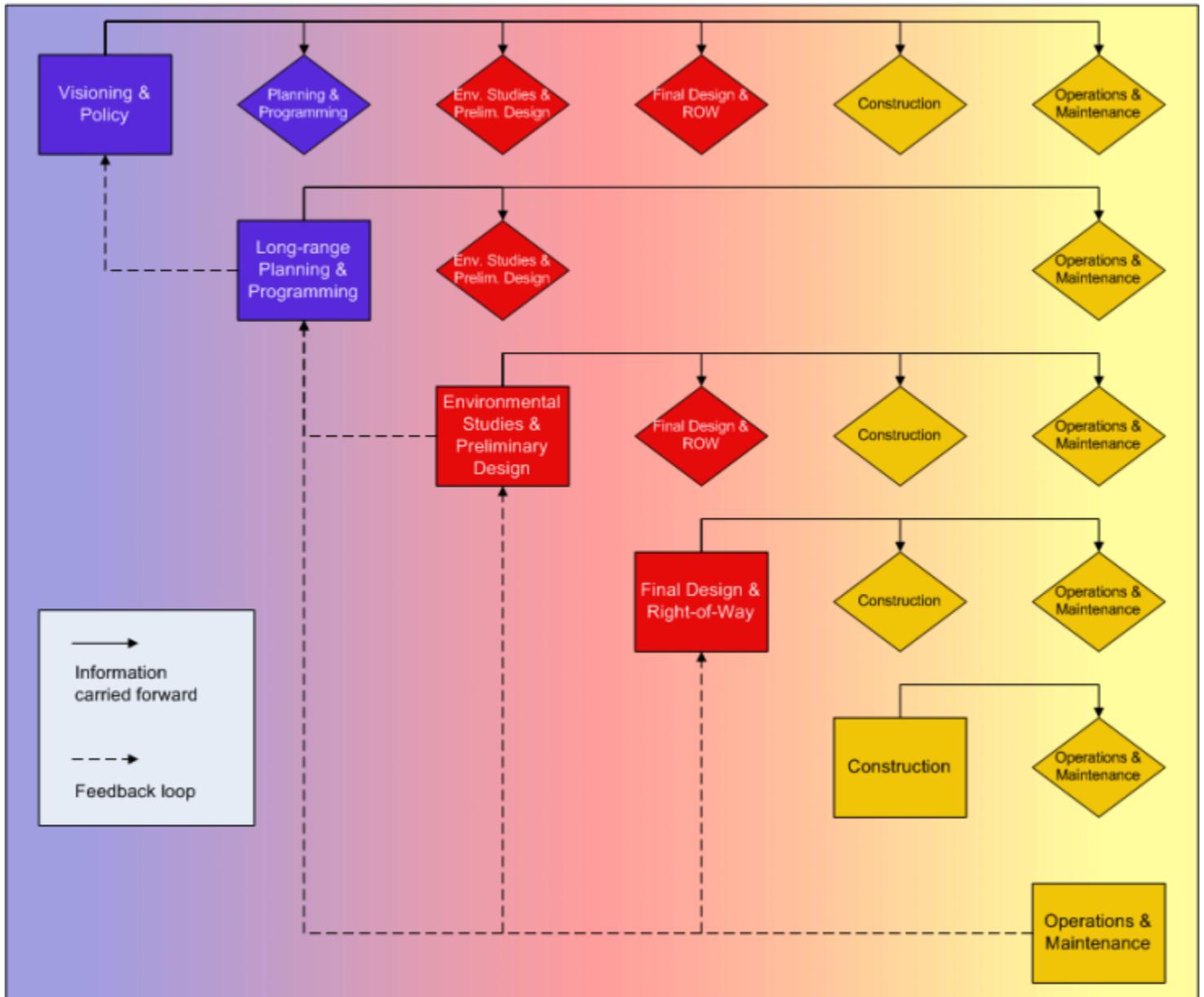
State DOTs and local transportation/public works agencies are typically responsible for decision-making in this phase. The FHWA and FTA have programs to provide leadership and guidance to these state and local agencies. Operations and maintenance practitioners are actively involved in making and implementing decisions at this phase. Citizens can provide input on potential operations and maintenance improvements as part of the long-range planning and programming phase (on a regional scale), or as part of the environmental studies and preliminary design phase (on specific projects). There is limited opportunity for direct citizen involvement in decision-making during this phase, although many DOTs will work closely with community leaders and practitioners to solicit input on potential needs and coordinate local and state activities. Citizens do play an important role as the “eyes in the field” for practitioners, providing information on things such as potholes, downed signage, and blocked ditches.

### **How is this phase connected to other phases of the transportation development process?**

Any vision or policy developed at Phase 1 should carry forward throughout the process, including to this phase. Additionally, operations or maintenance improvements might be identified as part of the long-range planning and programming phase, or may be identified as a project commitment during the environmental study and design phases. Relevant agreements and data from previous phases can aid in identifying operations and maintenance needs and priorities. Data collected and projects implemented as part of this phase can provide valuable input to planning, environmental studies, and design.

For more information on Phase #6, [click here](#).

# Connections between Phases of the Life of a Transportation Project



The figure above shows common connections between phases in the transportation decision-making process. Information is typically exchanged between the phases shown, although additional connections are also possible. For example, the high-level information gathered and developed during the long-range planning and programming phase is commonly carried forward to the environmental study phase (for identification of purpose and need and evaluation of alternatives) and the operations and maintenance phase (for identification of potential operations improvements or funding allocations), but is less likely to be used during the detailed design and construction phases.

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## CHAPTER 3: SHAPING TRANSPORTATION DECISIONS

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### **Section 3.3 - What is the Difference Between Project Development/Delivery and Operations and Maintenance?**

Most simply put, project development and delivery are about building projects. Operations and maintenance are about taking care of what is already built. This difference has a significant effect on the role and influence that citizens can have. Transportation agencies are most accustomed to considering context in the early phases of decision making, in long-range planning and environmental studies, when agencies are most likely to engage with the community and collaborate with citizens. It is during these phases, before decisions are made about the physical size and design of the project, that collaboration produces the most significant results.

DOT staff are more immersed in their physical surroundings during the maintenance and operations phase. Transportation agencies across the U.S. own approximately 4 million miles of road. In addition, these agencies manage approximately 12 million acres of land alongside these roads. Operations and maintenance are concerned with both long-term and short-term activities on both roads and the adjacent land, focusing primarily on how these physical assets can be maintained to the desired standards. Operations and maintenance staff must be continuously responsive and keep the system in working order with a limited, almost entirely state-funded budget, in contrast to building new projects, which are often 80% federally-funded. Consideration of the full costs of a project, through its entire life and maintenance is sometimes called life-cycle cost analysis and is a major area of interest and concern to operations and maintenance. Investment in more durable and/or pre-constructed materials can sometimes enable DOTs to “get in and get out” of communities and sensitive environments more quickly, and disturb them less often.

DOT maintenance staff are usually stretched. While demands on maintenance have increased in every state and environmental expectations join the busy slate of repair, mowing, maintenance, snow removal and other tasks, maintenance forces have been cut in many states over the last 15 years. Since maintenance and operations staff are generally dealing with routine activities to keep the system moving efficiently and in good repair, there is less need to collaborate with citizens. In addition, there is little time and staff support for community outreach in maintenance and operations. Decision making is severely budget-constrained, much more than in project development, and there is a premium on identifying improvements that might be able to be accomplished within existing budgets. Stakeholder participation is more likely to take the form of surveys ([California DOT example](#)), assessments of whether Level of Service is reached ([Washington State DOT example](#)), public notifications and sign-ups ([herbicide spraying example](#)), and occasional research projects ([roadside mowing example](#)). When they participate in interdisciplinary teams, DOT maintenance staff often can provide perspective on what may or may not work in different environments, from their practical experience, and what may be affordable within existing budgets. Maintenance staff will often stress that decision-makers in the planning and NEPA phases need to consider how expensive it will be to maintain and operate facilities they are planning and commitments they are making (financial sustainability).

DOT operations staff also face a growing list of tasks and limited budgets. Similarly to maintenance, operations decisions are typically made based on the budget and staff resources available. There are significant opportunities for information from earlier phases (such as planning and NEPA) to provide direction on the types and locations of operational improvements that should be made, but practitioners do not always take advantage of this opportunity for collaboration. Similarly, there is often a disconnect between the knowledge and data available to operations practitioners and the decisions being made in the planning and NEPA phases, creating inefficiencies in the decision-making process and depriving decision-makers of information that could influence their policy and project decisions.

Despite the limited resources for additional project work, the context considerations and opportunities for enhancement in maintenance are enormous, as evidenced by [AASHTO's compendium of environmental stewardship practices](#) in construction and maintenance (5 chapters of which are devoted to maintenance alone), published in 2004. DOTs are beginning to focus more attention on environmental maintenance and what enhancement might be done to support community preferences and values. For example, maintenance staff in the field may see cars informally parked on the side of a highway near a regular fishing spot and realize that the DOT may be able to improve fishing access, or operations staff in the field may be able to identify small improvements that could negate or delay the need for more major improvements. Since maintenance and operations staff are often out in the field, immersed in the context, much of the time, they can often provide valuable perspective on what is needed. Other times, surveys or direct mailings are used to discern citizen preferences or the sensitivities of adjacent landowners. Phone calls, emails, and letters also provide direction and notification.

In some cases, maintenance funds must be used to provide temporary relief of emergency safety issues or bridge deficiencies. With limitations on the funding available for permanent capital improvements, temporary situations such as these can continue almost indefinitely. It is imperative that practitioners in both maintenance and project development collaborate to identify a cost-effective permanent solution.

In construction and maintenance, the DOT carries out commitments made to stakeholders in earlier stages, or that the agency has taken on either voluntarily or to better comply with policies, laws, and regulations. The number of commitments is often very large. While DOTs typically try to standardize many sets of commitments into regular policy and "business as usual," some DOTs also engage in tracking individual actions needed on specific projects, which can result in very lengthy documentation (for example, Washington State has taken this approach). The tracking systems tend to offer greater assurance to regulatory agencies and other stakeholders that commitments are being carried out. DOTs typically see these systems as supporting internal management and technical work tracking functions more than serving external purposes.

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## CHAPTER 3: SHAPING TRANSPORTATION DECISIONS

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### Section 3.4 - What Are the Controlling Factors in Transportation Decision-making, and How is Professional Judgment Exercised as Part of the Process?

The role of the practitioner in transportation decision-making, at its core, is as a problem-solver. The practitioner must assimilate information about the transportation problem and the community context (human and natural environments), then factor in DOT policies and procedures including design considerations, financial constraints, any laws and regulations that apply to the project, and his or her professional ethical obligations. The result is a solution that must, by definition, involve trade-offs between these many competing, and sometimes conflicting, interests. It is often impossible for each interest to be completely satisfied. Achieving the best balance between interests may involve the practitioner finding a creative solution to the problem that, if not a total win-win from all perspectives, at least recognizes and attempts to address all concerns.

There are many factors that inform the decisions made in each phase of project development. These factors can be generally grouped into three categories according to how strictly they are applied: laws, policies, and guidance. **Laws** (or ordinances) are passed by Congress, state legislatures, and local governments, and establish legal requirements that must be followed in making transportation decisions. Federal, state, and local agencies often develop regulations based on these laws, which provide additional clarification of how the laws apply in specific circumstances. **Policies** are typically established within agencies and are intended to provide direction on the practices the agency uses to implement laws—it is generally required that policies be followed within the agency, but they do not carry the weight of law and may be flexible in some circumstances. **Guidance** is material that may be developed by agencies or by outside organizations and is intended to serve as a reference on standard practices, but is not *required* to be followed. The summary below outlines some of the controlling factors in each phase of transportation decision-making.

A table providing details on the factors that influence decisions in each phase can be found by [clicking here](#).



#### **Phase #1: Policy and Visioning**

At the national and state levels, the primary controlling factors are laws. At the national level, transportation funding authorization bills are the primary controlling factor—the current version, the **Safe, Accountable, Flexible, Efficient Transportation Efficiency Act: A Legacy for Users (SAFETEA-LU)**, took effect in 2005. States also have laws affecting transportation decision-making and funding within each state, and these can vary widely. Agencies such as

FHWA, FTA, and State DOTs create regulations documenting how the laws should be implemented in practice.



#### **Phase #2: Long-range Planning and Programming**

The activities undertaken in the planning and programming phase are primarily governed by the national and state laws and regulations discussed under Phase #1. States and Metropolitan Planning Organizations (MPOs) are required by federal law and regulations to develop long-range plans. For MPOs, these plans must describe the planned projects over a 20-year-minimum period based on expected revenues available for programming. Long-range

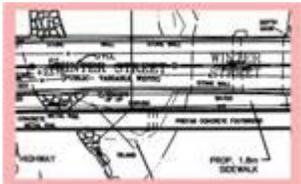
plans must be developed at least every 4-5 years. States and MPOs are also required to develop Transportation Improvement Programs (TIPs) at least every 4 years, which allocate funding to specific projects over a 4-year-minimum period. State laws or state/MPO practices may dictate an update cycle shorter than the minimum requirements. In addition to these federal requirements, many states have state laws that establish specific requirements or priorities for plans or funding allocations. Every state and MPO has an established process, documented or informal, for determining funding priorities. FHWA has developed significant **guidance** to support MPO and state long-range planning.



### **Phase #3: Environmental Studies and Preliminary Design**

Any transportation projects that receive federal funding are subject to the requirements of the National Environmental Protection Act (NEPA). This law requires that the potential environmental impacts of projects be examined as part of the decision-making process. Regulations have been developed to govern the steps required in developing an Environmental Impact Statement (EIS), Environmental Assessment (EA), or Categorical

Exclusion (CE). In addition to NEPA, there are several other federal laws that govern impacts on parkland, threatened and endangered species, economic and social impacts, historic and archaeological resources, and indirect and cumulative impacts. Again, FHWA has developed **guidance** for completing NEPA for highway projects. Several states have also developed state environmental protection laws that apply to projects receiving state funding. The “Green Book” (described in more detail under Final Design) is also used during Preliminary Design as guidance for design parameters and criteria. There are many individual State DOT policies, standards and general guidance on conducting environmental studies and preparing preliminary and final designs. Some of these are incorporated into state law, while others are generated by the agency.



### **Phase #4: Final Design and Right-of-way**

*A Policy on Geometric Design of Highways and Streets* (the “**Green Book**”) is the foundation of much of the guidance followed in this phase. The Green Book sets standards for the design of roads, and has been adopted by FHWA as a policy governing design standards on the National Highway System (NHS – includes major roads such as Interstates and US Highways). State DOTs also develop design standards to be followed on non-NHS facilities, which may be

more or less stringent than those found in the Green Book. While the Green Book does provide guidance on the standards typically followed in roadway design, it also allows for flexibility to meet the individual challenges and characteristics of projects—several **documents** have been developed to provide guidance on the appropriate application of flexibility in these standards. The **Uniform Relocation Assistance and Real Property Acquisition Policies Act** of 1970 is the primary law governing the right-of-way acquisition process.



### **Phase #5: Construction**

State DOTs develop policies and guidance to regulate the decisions and actions in the construction phase, sometimes in the form of a construction manual or as part of the design manuals used in Phase #4. These policies regulate the actions of both agency employees and any contractors hired to perform construction tasks.



### **Phase #6: Operations and Maintenance**

Several policies and guidance documents have been developed to provide information to practitioners in this phase. FHWA has established several policies and practice recommendations for operations and maintenance, including staffing guidelines and the **Manual on Uniform Traffic Control Devices (MUTCD)**, which provides standards on the use of traffic control devices such as signals, pavement markings, and signage. States may also have

their own policies on operations and maintenance practices. Design standards for Resurfacing, Restoration, or Rehabilitation (3-R) projects are generally developed at the state level, although the Green Book (see Phase #4) is used as the standard 3-R guidance for freeways.

### ***What does it mean to be flexible?***

“Flexibility” is a term used often in discussions of Context Sensitive Solutions, but there is often some confusion about what it really means. Some people think that flexibility means compromising professional standards and safety in order to meet the demands of stakeholders. The key to flexibility, during any phase of project development, is a thorough understanding of what is required and what is a choice, to be determined using the professional judgment of the practitioner. Often

professional resources, such as the AASHTO *Green Book*, are referred to as “standards,” implying that there is a single correct value that should be applied. In fact, most often there are no single answers. Each situation is different and requires professional judgment. Flexibility should be thought of as the selection of a “best” choice out of the full range of acceptable choices, each of which has its own merits, to appropriately suit the individual situation. The AASHTO *Green Book*, for example, is recognized nationally as a policy to help guide engineers in the application of their professional judgment, and serves as core of the design standards adopted by many state and local agencies. However, the *Green Book* is not a standard in and of itself; many of its design criteria have ranges of acceptable values, and several design controls, such as design speed and design vehicle, are left to the designer’s discretion (with appropriate guidance). Another example of flexibility is the flexibility granted to each state and MPO to craft its own process for conducting long-range planning, allowing these agencies to accommodate their individual circumstances while still addressing the general requirements outlined in federal and state laws. Similar questions of flexibility require practitioners to use their professional judgment throughout the transportation decision-making process.

### **Foreword from the AASHTO *Green Book***

The intent of this policy is to provide guidance to the designer by referencing a recommended range of values for critical dimensions. **It is not intended to be a detailed design manual that could supersede the need for the application of sound principles by the knowledgeable design professional. Sufficient flexibility is permitted to encourage independent designs tailored to particular situations.** Minimum values are either given or implied by the lower value in a given range of values. **The larger values within the ranges will normally be used where the social, economic, and environmental (S.E.E.) impacts are not critical.**

The highway, vehicle, and individual users are all integral parts of transportation safety and efficiency. While this document primarily addresses geometric design issues, a properly equipped and maintained vehicle and reasonable and prudent performance by the user are also necessary for safe and efficient operation of the transportation facility.

### ***What choices do engineers have?***

Transportation engineers use the *Green Book* to help them guide their professional judgment to solve engineering problems. However, the preliminary and final design phases deserve specific attention in any discussion of flexibility because that is where the engineer must marry together geometric design with quality of life considerations, community values and regulatory requirements. Engineers are tasked with using the flexibility that is inherent in the existing design references, such as the *Green Book*. Some practitioners may believe that the *Green Book* documents standards, but in fact it is only a *policy*. The engineer’s professional judgment is what is ultimately responsible for the final design. As one DOT design manual put it:

“The objective of our process is the design of attractive highways which provide adequate safety and convenience to motorists....Variations from this manual will be necessary for special or unusual conditions....Consequently, **instructions in this document are not intended to preclude the exercise of individual initiative and engineering judgment in reaction to site specific conditions or application of current state of the art practices...**”

Since the *Green Book* is a policy and not a standard, engineers have choices. Choices on how much and what type of traffic to accommodate (including different modes), the level of service, design speed, design vehicle, design elements, how to assemble the design elements, and how to operate the facility. These choices are not easy to make, because they require the engineer to develop additional alternatives and evaluate them to make an informed judgment on the final design. The engineer must balance competing stakeholder interests, and accept that reasonable professionals may differ on what is best to do. Moreover, solving a unique or new problem may mean taking risks by trying something new or unproven. The **context questions** from Chapter 2 can help engineers develop alternatives that are reflective of the context.

See: Understanding Flexibility in the AASHTO Green Book: A Webinar on Geometric Design, AASHTO, 2009

## CSS vs. Value Engineering

Value Engineering in transportation is a systematic method to improve the “value” of a project by examining its function (e.g., the function of all of its design elements) to find opportunities to reduce cost while preserving the basic function. For example, a Value Engineering analysis may result in a road widening project having reduced lane and shoulder width. Vehicle capacity is maintained, but materials and right-of-way costs are reduced.

Some practitioners perceive that Value Engineering and CSS are inherently at odds because they perceive that CSS costs more since the public always wants extras and aesthetic treatments. This perception is not valid. While some projects following the CSS philosophy may indeed cost more than they would have otherwise in some circumstances, CSS can also help reduce costs in two ways: by discovering community concerns early in the process and engaging the community as an active partner in the process, to reduce costly delays, re-designs, and lawsuits later; and by using the stakeholders to find alternatives to the proposed design that may accomplish the transportation goals with less cost. For example, community leaders involved in the process may agree to increase access controls on a roadway using local land use regulations in order to reduce the amount that the roadway must be widened to improve vehicle capacity and reduce congestion. Such a solution would reduce cost to the DOT as well as reduce impact on local businesses and property owners.

*Design Exceptions.* Most state and local transportation agencies either adopt the AASHTO *Green Book* as their policy on roadway design or develop their own policies, which are often based on the *Green Book*. Typically, these policies will allow for a process of “design exceptions,” which are a method of allowing designs that do not meet the set policies. The design exception process is not a free pass, but rather a method for justifying designs that vary from the standard parameters. It is important for practitioners to have a clear understanding of the design exception processes in their states in order to implement flexible designs within a CSS framework. For more information on design exceptions, [click here](#).

*Impact of choices on context.* The context of a project is of particular concern with respect to design because of its two-way relationship. Context affects design by defining what the engineer must take into account (overall urban/suburban/rural setting, pedestrian/bicycle activity, adjacent land uses and access needs, traffic volumes), but design choices also affect the context components by influencing public health, safety, and quality of life. The overall width of a roadway, for example, can have a substantial impact on how attractive (or not) it is for a pedestrian to cross the street. Special attention to save a large tree valued by the community during a widening project can maintain community character and enhance the final project. Smoothing out a dangerous tight curve in a roadway can dramatically improve safety.

*Limits of design decisions.* Transportation engineers have many choices and concerns, but they can only affect what happens within the right-of-way of the street. The adjacent land uses, access control and many other factors impacting the “look and feel” of the roadway to the citizen are either not within the control of the DOT (but rather the local government) or are decisions made at other phases during project development (and thus cannot be changed by the design engineer). For example, an engineer may be able to change the width of the lanes on the roadway, the curb radius at intersections and the inclusion of bus pull-outs (all design elements that are conducive to transit service). But the design engineer cannot ensure that there is bus service on the roadway, even if that is what citizens and community leaders would like. Implementing transit is dependent upon having appropriate land uses (enough residents and employees within walking distance of the proposed route) and upon the transit provider having the capability and funding to add the route, both of which cannot be affected by the engineer during the design phase. Land use decisions, in particular, are controlled by the local government through its zoning and development ordinances and are typically not influenced by DOT (see [Section 2.1](#) for more description of land use interactions with transportation). Coordination and collaboration among practitioners involved in the different phases of the transportation decision-making process is an essential element in assuring that decisions made in one phase of the process do not have negative unintended consequences in later phases.

*Design considerations.* Following are descriptions of the design considerations that have the most influence on the application of CSS principles. Any one of these will set a framework for other design decisions, and once set can significantly narrow the range of values the design engineer will consider. It is important that there is a full understanding of the context before any decisions are made.

1. *Functional Classification* - The Green Book divides roadways into classifications based on their length, traffic volume, speed and degree of access control (limited access vs. unlimited). These classifications are freeway, principal arterial (major thoroughfare), minor arterial (minor thoroughfare), collector, and local. Conflicts can sometimes arise when the official functional classification of a roadway is not in line with the on-the-ground characteristics of the facility. For example, in many areas, state highways are classified as principal arterials even if they are far more vital to community access than to regional mobility. This creates a dilemma for highway designers: the application of design standards for the principal arterial class may encourage higher operating speeds than are appropriate for segments serving community access. To address this issue, the PennDOT/NJDOT *Smart Transportation Guidebook* proposes an alternative roadway typology as a supplement to the Green Book's classification, in order to better capture the role of the roadway within the community. It focuses more narrowly on the characteristics of access, mobility and speed, and applies different classifications to segments of the same roadway. If a segment of an arterial roadway has a relatively low speed, is important to community access, and has a lower average trip length, the guidebook recommends that it not be designed as a high-order arterial. This represents only one example of an innovative approach to functional classification.
2. *Design Level of Service* - The Highway Capacity Manual defines level of service (LOS) as a "performance indicator of a traveler's satisfaction with the trip." Selection of a target LOS is a policy decision based on an agency's philosophy on what represents an acceptable level of traffic congestion. When DOTs aim to achieve a high LOS ranking on many roadways, they are required to widen streets, add lanes, get rid of on-street parking, limit crosswalks, and add turn lanes. A wide road can turn into a speedway, which can be difficult to cross and unpleasant to walk along. It is important to collaborate with citizens to ensure that LOS targets are consistent with the context and the desires of the community; for example, a high LOS target would not be appropriate in a dense urban neighborhood, but may be appropriate on a suburban arterial. There is no "standard" level of service that engineers must use. LOS is a critical element of decision-making not only in the design phase, but also in planning and operations. It should be noted that the AASHTO Green Book contains guidelines for use in determining appropriate LOS for roadway design projects; however, there is flexibility allowed within these guidelines. The Green Book states "choice of an appropriate level of service for design is properly left to the highway designer." In the planning phase, practitioners typically have a wide degree of latitude in selecting LOS targets for determining system deficiencies and project needs.

### **Understanding Traffic Modeling and Traffic Forecasting**

*Adapted from: Project for Public Spaces, "A Citizen's Guide to Better Streets: How to Engage your Transportation Agency", 2008.*

[http://www.pps.org/pdf/bookstore/How\\_to\\_Engage\\_Your\\_Transportation\\_Agency\\_AARP.pdf](http://www.pps.org/pdf/bookstore/How_to_Engage_Your_Transportation_Agency_AARP.pdf)

Transportation planners use many models to forecast future traffic levels. They are all based on data about current and future traffic levels in the study area. Without direction or a reason to do otherwise, transportation planners will usually assume that growth and land use patterns will continue to occur without regard to the type and level of transportation investment. They will also likely assume that future growth will occur in the business-as-usual pattern of existing, often sprawling, land uses that separates businesses from homes and services and configures new streets to be circuitous and disconnected so that walking and biking are inconvenient. In this pattern there is no supporting grid of streets to relieve the main roads, and arterial roadways are forced to carry almost all of the new traffic generated by the growth.

If high rates of growth are assumed in the model for future traffic, the DOT will likely recommend a series of roadway widenings or intersection expansions because the model predicts high future traffic volumes and low level of service ratings. If the traditional LOS C or D performance measures are adopted as non-negotiable targets, recommendations for major road construction are almost certain. What's more, most traffic models also include background traffic growth, which assumes that traffic continues to steadily grow even without any population or employment growth in the area. This practice will further boost the high volumes predicted 20 years into the future. The assumptions that are used in

developing the model and in quantifying transportation deficiencies have a major impact on the resulting project recommendations that go into plans and programs.

It is critical for all practitioners and stakeholders in the transportation decision-making process to take a close look at the LOS performance measures used in planning and the growth assumptions used for traffic modeling. For a particular region, there may be several different estimates of projected growth, ranging from conservative to aggressive. Which estimate an agency chooses is very important. Some of these estimates may be valid, but some may be simply based on the unrealistic continuation of past growth trends. Unrealistic traffic forecasts, either too high or too low, lead to impractical or inefficient project decisions being made.

3. *Safety* – Many times, safety is addressed as a “yes” or “no” equation – a particular design is thought of as “safe” or “unsafe.” In reality, there is no such thing as a “safe” roadway design (with no risk of accidents). Safety is instead a continuum – a design can be “less safe” or “more safe” than another. In response to this reality, two terms are often used to refer to safety. Nominal safety is defined as the compliance with standards, warrants, guidelines and sanctioned design procedures. Substantive safety is the expected or actual crash frequency and severity for a roadway (as quantified in the number of accidents, their type and severity), and is a function of the application of necessary aspects of nominal safety while exercising sound engineering judgment based on broad professional knowledge and practical experience. Collaboration with citizens can sometimes lead to the consideration of transportation improvements that may not meet a specific safety guideline—it is the role of the engineer to help determine the amount of flexibility that is acceptable from a technical perspective to ensure that the impact on safety is not unacceptable. Safety considerations are also a major factor in decisions made during the operations and maintenance phase.
4. *Design Speed* – Design speed is the selected speed used to determine various geometric features of the roadway. It is a very important design control, as it is a primary determinant of the criteria used in most elements of road design, making it a major factor in the development of a context-sensitive project. The Green Book states that design speed should be selected logically with regard to topography, anticipated operating speed, adjacent land use, and functional classification. In current design practice, designers rarely negotiate a target operating speed, but rather set it based on the expected posted speed limit plus five to ten miles per hour. In a collaborative process, the appropriate target speed is determined early in the project development process in collaboration with the community. The discussion regarding appropriate design speed should consider: the context of the roadway, including adjacent land use, area type, roadway type, and access control; the volume and mix of facility users; and the anticipated driver characteristics and familiarity with the route.
5. *Access Control* - The type of access control along a roadway is a major design decision with far-reaching implications on the flow of traffic, the development of adjacent land, and the accessibility of individual properties and neighborhoods. For some types of facilities, such as freeways, access control decisions are relatively straightforward; on arterial highways, however, access control is a major decision for roadway designers. In a CSS process, practitioners should collaborate with citizens and other stakeholders to determine the correct balance between the access and mobility functions within a corridor.
6. *Other Design Controls* - These are many (but not all) of the design-related considerations that an engineer takes into account. There are many **other design controls and design features** that apply to construction or reconstruction within the National Highway System (essentially interstates and US Highways), regardless of funding source. On projects that are not within the National Highway System, state DOTs can set their own design standards, which are typically derived from the Green Book but are often slightly different and may be more stringent. These design controls include:

Lane Width	Shoulder Width	Bridge Width
Horizontal Alignment	Superelevation	Vertical Alignment
Grade	Stopping Sight Distance	Cross Slope
Vertical Clearance	Horizontal Clearance	Structural Capacity

## ***What is professional judgment?***

Each practitioner develops his or her professional judgment through advanced education and training, on-the-job experience, mentoring, collaborative partnerships, understanding how to work within relevant laws, regulations and standards, and adherence to the rules of professional conduct or ethics of his or her discipline. Professional judgment is what enables practitioners to engage in critical thinking to find a solution to meet multiple objectives. This section will examine in some detail the factors involved in developing and exercising professional judgment for different disciplines involved in the decision-making process.

### *Why is it important to exercise professional judgment in the decision-making process?*

As described in previous sections, the decision-making process for a transportation project is lengthy and involves numerous tradeoffs that practitioners must balance. Tradeoffs must be made between what stakeholders would like to see in their community, what makes sense with local land use conditions, what improvements are needed for vehicle capacity, what safety issues need to be addressed, and what alternative modes need to be included. In addition, the laws, regulations and standards described above guide the practitioners' decisions. Professional judgment is what practitioners draw upon to balance these complex factors in making critical decisions throughout the process.

Engineers, in particular, have ethical responsibilities to protect public health, safety and welfare, as regulated by state laws. These responsibilities are compatible with quality of life considerations and weigh heavily on engineers during the decision-making process, when critical decisions are made that affect the safety of motorists, pedestrians and cyclists on the roadway as well as other public health and welfare issues. An engineer is tasked with using his or her professional judgment to find the best solution to improve, or at least not diminish, safety in an area while satisfying other needs and interests as well.

Engineers are not the only practitioners who must exercise professional judgment, however. All practitioners involved in all phases of transportation decision-making must use some amount of professional judgment. Many transportation practitioners are in fields that are governed by professional organizations with specific licensing requirements and codes of conduct for members. Detailed information on the licensing requirements and rules of conduct for different types of practitioners can be found by [clicking here](#). These requirements are recognized and valued within a context sensitive transportation decision-making process. Nothing in these licensing requirements or codes of conduct is in conflict with the principles of context sensitive solutions or disallows the exercise of professional judgment in decision-making.

### *What kind of discretion do practitioners have in exercising their professional judgment?*

There are two types of decisions generally made by practitioners: ministerial and discretionary:

**Ministerial functions** – Clearly defined tasks or responsibilities entailing little personal judgment. Examples:

- Highway maintenance – repairing potholes, replacing a downed sign, repair a shoulder edge drop-off.

**Discretionary functions** – Involves decisions requiring judgment by professionals. Examples:

- Interpretation and application of design controls, design features and design exceptions
- Selection of alternatives
- Selection of LOS targets

The distinction between these functions is critical because, while state laws vary, many states consider discretionary functions to be immune from tort claims. That means that a person generally cannot sue a government agency over the actions of its employees requiring professional judgment, as opposed to routine decisions such as failure to repair a deficient guardrail. The implication for the decision-making process is that engineers need to understand that the majority of their design decisions are discretionary and can be made more creatively in response to the factors presented by the particular challenges of a transportation project without the fear of litigation. In fact, if a design team works closely with stakeholders,

is creative within the bounds of good engineering practice, and fully documents all decisions, they will have gone a long way toward minimizing the risk associated with a future tort action should that occur. Construction and maintenance practitioners also need to understand their responsibility to ensure public safety and how their actions can affect the agency as a whole.

In addition to understanding the difference between ministerial and discretionary decisions, engineers need to understand the difference between guidelines and standards. Design standards, as discussed above, are determined by each state DOT for projects not within the National Highway System (NHS) and by FHWA for projects that are within the NHS. FHWA has adopted "A Policy on Geometric Design of Highways and Streets" (the "Green Book") as the design policy that applies to projects within the National Highway System. Although some engineers consider the Green Book to constitute a standard, it is only guidance. The Foreword from the Green Book describes the intended limitations of the Green Book's guidance for engineers in the following terms: "[This policy] is not intended to be a detailed design manual that could supersede the need for the application of sound principles by the knowledgeable design professional. Sufficient flexibility is permitted to encourage independent designs tailored to particular situations."

### **Will the Vision Overcome Liability Concerns?**

Source: Richard Jones, "Will the Vision Overcome Liability Concerns?" TRB Annual Meeting 2004. [http://www.berger-nc.com/cssresources/DesignFlexibility/CSD\\_Liability\\_Jones.pdf](http://www.berger-nc.com/cssresources/DesignFlexibility/CSD_Liability_Jones.pdf)

"During the 1960s the American public decided that context matters. The public began to demand transportation projects with less impact to the community and its environment, even at the cost of reduced safety and mobility. Mounting public pressure caused Congress to enact laws and establish public policy objectives to protect and enhance our environment and cultural resources. More recently, Congress has encouraged flexibility in highway design to accomplish these objectives. The development by AASHTO, TRB, state departments of transportation, and FHWA of a process to meld design with these public policy objectives came to be called context-sensitive design/context-sensitive solutions. The process envisioned is one that results in a transportation project reflecting community consensus on purpose and need, with project features addressing equally safety, mobility, and preservation of scenic, aesthetic, historic, and environmental resources. This vision requires the exercise of flexibility in design – the balancing of competing interests.

Some are concerned that increased exposure to tort liability will result should design standards or guidelines become too flexible, because it would fail to treat safety as a paramount concern. This assumes that safety is considered a paramount concern in both transportation design and in tort law. I have tried to show that this is an erroneous assumption and that Congress has established statutory requirements and public policy clearly demonstrating that safety, while a primary consideration in design, is not to be a paramount consideration; that safety, as a primary consideration in design, should be balanced with mobility, protection and enhancement of the natural environment, and preservation of community values.

While existing case law does not currently reflect consideration of formal CSD/CSS processes, as such, some cases, particularly in the federal sector, recognize and grant design immunity to policy judgments that balance competing interests in the design process. Ultimately, tort law must coincide with public opinion and public policy to be in the public interest. Therefore, it is my belief that, in the long term, tort law will be influenced by the public opinion and public policy that has been established and will adjust to accommodate CSD/CSS processes, reducing liability exposure. I strongly believe we must do a better job of documenting our CSD/CSS decisions with the view of telling the whole story to juries in future tort litigation. I believe that, in the short term, such documentation will greatly assist agency counsel in explaining and proving the reasonableness of design decisions and the circumstances, the context, within which they were made. I believe the CSD/CSS vision will overcome liability concerns, both in the short term and in the long term."

- Richard O. Jones  
TRB Thomas B. Deen Distinguished Lecture, 2004

CSS does not mean that design engineers can throw away the Green Book. CSS demands that practitioners understand the basis or background behind the Green Book's guidelines and other 'best practices' so that they can more effectively design a solution that meets safety, mobility, environmental and community goals.

The ability to develop a context-sensitive solution by working within and sometimes outside design criteria, while maintaining the safety and operational integrity of the highway, requires a broad and deep understanding of the operational effects of highway geometry. For this reason, knowledgeable, experienced, professional highway engineers are essential for a successful context-sensitive project. (*A Guide for Achieving Flexibility in Highway Design*, AASHTO 2004)

In order to understand the basis for 'best practices', design engineers need to fully understand the research underpinning current design criteria and the emerging research that is revealing information regarding safety consequences of past geometric solutions. In some cases, previous assumptions on geometric safety consequences may not be as accurate as once believed. For example:

- Are 12-foot lanes always safer than 10-foot lanes?
- Do street trees along urban streets increase or decrease safety?
- Does designing a road to a higher design speed always make it safer?

These are the types of issues that must be considered as part of the practitioner's exercise of professional judgment. For examples of research on some of these safety issues, [click here](#).

Understanding the basis of safety recommendations is critical in order to effectively make tradeoffs between safety and mobility. These tradeoffs have always been made, such as allowing right turn on red, center turn lanes, and high design speeds. If engineers understand the safety implications of design choices, they can more effectively decide whether the tradeoff makes sense given the conditions at the site.

### **A Note About Cost**

Cost is an important element of transportation decision-making, and one that is often an issue of concern in discussions of CSS. Practitioners in particular, but also citizens, often worry that by incorporating CSS into decision-making, it will lead to additional costs, some of which may be for elements they consider to be "unnecessary" or "unimportant." The philosophy of these stakeholders can be summarized as: "Why buy a Cadillac if you can buy two Chevrolets for the same price?" While there is a certain amount of validity to these concerns, they are not a valid reason to give-up on the CSS process.

The best way to ensure that cost does not become a major issue on a CSS project is to be clear with all stakeholders up-front about cost constraints. Practitioners should clearly explain any known cost constraints to the citizen stakeholders, as well as the consequences for not abiding by those constraints. On the other hand, practitioners also need to understand that what they consider a "Chevrolet" project may be someone else's "lemon"—the concerns of all affected stakeholders are legitimate and should never be dismissed as unimportant. Open and honest communication among all stakeholders, especially when weighing the benefits and costs of decisions, is the key to the successful implementation of CSS.

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## CHAPTER 3: SHAPING TRANSPORTATION DECISIONS

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### Section 3.5 - What Aspects of Decision-Making are Outside of DOT Authority?

Many transportation practitioners work within the agency framework of a state Department of Transportation (DOT), or work very closely with the state DOT. This section explains some of the limitations on the decision-making authority of the DOT – while this information may not directly apply to those practitioners who work outside the DOT, it is important that all practitioners have an understanding of these key issues, as they often have far-reaching impacts.

The transportation decision-making process ([see six phases table](#)), as described earlier in this chapter, is quite complex. Individual phases can involve steps that occur over an extended period of time, with the involvement of many different people and agencies. While the state department of transportation (DOT) has substantial control over this process, its authority is limited in two major ways:

1. Many of the steps in the decision-making process are affected by laws, regulations, processes and funding requirements that are created and/or implemented by other agencies or groups.
2. Local land use decisions made by local governments impact the transportation context and affect the range of feasible transportation options to solve a particular problem.

#### ***Working with Decision-making Agencies Outside the DOT***

DOTs that collaborate with the agencies, groups, and local governments that have influence over various parts of the decision-making process will find that this cooperation and partnership streamlines the process and prevents costly delays later in the process. The case study below provides an example of how a DOT has created such a partnership.

#### **Route 29 in Trenton, New Jersey**

Taken from “Great Corridors, Great Communities: The Quiet Revolution in Transportation Planning”, Project for Public Spaces, 2008  
[http://www.pps.org/pdf/bookstore/Great\\_Corridors\\_Great\\_Communities.pdf](http://www.pps.org/pdf/bookstore/Great_Corridors_Great_Communities.pdf)



Built in the 1960s as a limited-access expressway along the Delaware River in western New Jersey, Route 29 isolated once-lively downtown Trenton from the riverfront Stacy Park and the water itself. The highway also took over much of the riverfront park, relegating it to an isolated and virtually unusable strip of grass. Route 29 has also been the site of a large number of traffic accidents. As a result, the road has been a sore point for Trenton’s community leaders for years.

In 2004, New Jersey Department of Transportation (NJDOT) started listening to their concerns, and today, a wide consortium of players is partnering to create a corridor that works for everyone. An extensive public involvement process led to a plan

in which Route 29 will continue to serve through traffic, but will provide improved pedestrian access to Stacy Park and be better integrated into Trenton’s network of local streets.

Freeway-style interchanges will be replaced by pedestrian-friendly intersections with traffic lights or roundabouts and crosswalks. The highway’s 12-foot-wide lanes, designed for 55 mph traffic, will be narrowed to make way for on-street parking, sidewalks, street trees and pedestrian-scale lighting. A cloverleaf interchange and large surface parking lots in

the downtown will be redeveloped into a new district of mixed-use buildings.

After this transformation, driving the three-mile-long corridor will require only two additional minutes of travel during the morning rush hour. NJDOT and community leaders agree that this minimal loss of time is more than made up for by improved safety, enhanced connectivity and multi-modal access throughout the corridor. Construction is set to start in 2011. “The passion and the need [to improve downtown] have always been there, but without the passion of the DOT, we’d still just be talking,” said Trenton mayor Douglas H. Palmer. “Now we’re talking and moving towards implementation. This will transform the city.”

Many of the steps in the project development process are under total or partial authority of agencies other than the DOT. Particularly in the earlier phases of the process, from Policy (Phase #1) through Environmental Studies and Preliminary Design (Phase #3), the DOT is involved in the process but must share authority with other agencies and groups. In two cases – the approval of funding requirements and mechanisms, and the approval of environmental documents and permits – the DOT has no control at all. In the former case, the legislature generally controls that step, and in the latter case, it is environmental agencies (such as the EPA or Army Corps of Engineers). [This table](#) shows the practitioners that are typically involved in decision-making at each phase of the process.

### ***Working with Local Land Use Regulations***

In addition to the elements of the transportation process where the DOT has limited authority, local land use decisions made by local governments affect the transportation context and the range of feasible transportation options to solve a particular problem. Depending upon the state and the particular local government, the process for making land use decisions may be different, but typically involves boards of elected officials, committees of stakeholders and citizens, and professional planning staff (either local government employees or consultants). These land use decisions are typically made in two ways:

- During the process of creating local land use and transportation plans (or a comprehensive plan), during which a vision for the future of the community is created or confirmed, general maps showing the future desired density and type of land use are created, and future roadway functions and connectivity are determined.
- During the development review process, when new or redevelopment projects come up for approval. New development can affect the transportation system by adding an additional origin/destination for trips, changing existing traffic patterns, and slowing down traffic by adding additional turning movements into/out of the development.

Local land use decisions impact the transportation decision-making process in two ways:

- Local land use **is part of the context** of the transportation project. As discussed in [Section 2.1](#), land use and transportation each affect the other, as transportation improvements improve access and make certain parcels more or less attractive to development, and land use choices impact the number and type of trips.
- Local land use decisions affect the **range of options** available to practitioners to solve transportation problems. Introducing transit service into the long-range transportation plan would only be an option if the local land uses allow viable transit service (i.e., the density of allowed uses provides enough residents and employees within walking distance of the proposed route to create adequate ridership). State DOTs control access to roads through a driveway permitting process, but the number of driveways requested is driven by the pattern of development and off-road access between individual parcels both of which are controlled by through land use regulation.

The following example illustrates one example of how a DOT and local governments have worked together to integrate transportation and land use planning.

## Route 9 in Ocean County, New Jersey

Taken from "Great Corridors, Great Communities: The Quiet Revolution in Transportation Planning", Project for Public Spaces, 2008  
[http://www.pps.org/pdf/bookstore/Great\\_Corridors\\_Great\\_Communities.pdf](http://www.pps.org/pdf/bookstore/Great_Corridors_Great_Communities.pdf)

The Route 9 corridor project involved 30 miles of the state highway, which serves the needs of 12 seashore communities along the coast of central New Jersey. Land use patterns in this corridor have changed dramatically over the past several decades. Seasonal homes are being replaced or upgraded to year-round residences as more people seek to live at the seashore. In turn, property values have skyrocketed, and rampant congestion has followed. The business-as-usual solution to this growing congestion and feverish real estate development would entail a major widening of the northernmost 20 miles of this stretch of Route 9. However, with development immediately adjacent to the roadway, the widening would incur staggering right-of-way costs, and the effect on local communities and the natural environment would be devastating. Simply put, the cure would likely kill the patient.



A widening project would require an estimated \$150 million for property acquisition and more than \$500 million for construction. The New Jersey Department of Transportation realized in this case that the conventional approach to congestion management was neither a responsible nor affordable solution. If NJDOT had not been honest about its inability to widen Route 9, local jurisdictions would have continued to approve development proposals based on the unrealistic expectation that NJDOT would someday find a way to fund widening the road. This would have created a situation where local communities would continue to believe that the State of New Jersey would eventually reward unsustainable development patterns in the corridor. Instead, NJDOT

embraced an integrated transportation and land use approach, which helped state agencies and the 12 affected seashore communities recognize the need to work together to address the emerging problems. The project participants all signed a Partnership Agreement that supports solutions which balance the need for development with the need to maintain community character, protect natural and historic resources and improve quality of life.

Since then, NJDOT has been helping communities along Route 9 improve their overall transportation infrastructure as well as apply a better land use framework so that they can respond effectively and responsibly to the challenges and opportunities of growth. NJDOT has also promoted solutions that optimize the resources of the state and offer far-reaching—rather than temporary—solutions to traffic congestion. The first major milestone in this process was the Route 9 Corridor Master Plan, which established six guiding principles for the area. In order to implement the Route 9 Corridor Master Plan and turn these principles into reality, the Route 9 Corridor Coalition was formed. State and regional agencies and townships and boroughs, located throughout the corridor, comprise the coalition which meets periodically to share information and discuss issues.

Some early successes have emerged from the process. One of the Route 9 communities, Ocean Township, received approval for improvements to its town center, which will provide an area for new economic development in an appealing and environmentally appropriate manner. This concept will likely enhance mobility by providing a new grid of streets for through, local, and non-auto travel. "The goal of our town center is to give people alternate travel routes and to lower speed limits to be compatible with pedestrian activity," said Ocean Township mayor Daniel Van Pelt. "We need to help enhance our sense of community by getting people to walk more and interact with each other."

### ***What can DOTs do to Help Coordinate Decision-making?***

Even though DOTs do not have direct control over all decisions that affect the transportation system, there are actions they can take to try to coordinate these decisions and ensure that decisions made by different agencies and levels of government are mutually beneficial. Interdisciplinary teams, discussed in [Section 2.3](#), can also be inter-agency teams, and present an opportunity for coordination and collaborative decision-making between the DOT and outside regulatory agencies. Several states have developed official processes for integrating and streamlining transportation decision-making among the DOT and outside regulatory agencies, including [North Carolina](#) and [Florida](#). Additionally, informal or formal decision-making partnerships can be created with local governments, as in the example presented above. Local government partnerships are especially important for developing and implementing actions such as access management strategies and corridor plans , which require coordination with the local land development planning and approval processes.

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## CHAPTER 4: GOING THE DISTANCE TOGETHER—PARTNERSHIP THROUGH COLLABORATION

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### Summary

*Collaboration in the transportation decision-making process can be an effective tool for building support among citizens, sharing information among stakeholders, and developing solutions that meet both transportation needs and support community quality of life.*

- *Collaborative processes come in many forms, and can occur throughout the transportation decision-making process. However, collaboration is particularly effective during the Planning and Environmental Study phases, when the opportunities for citizens to influence project-level decisions are highest.*
- *Barriers to collaboration in transportation decision-making include differences in communication and decision-making styles, inflexible standards, failure to follow-through on agreements, and insufficient involvement from stakeholders; however, none of these barriers are insurmountable.*
- *Several collaborative methods and strategies are available for use in the transportation decision-making process, including strategic partnerships, facilitated discussion, interactive analysis, and social media.*
- *The success of collaborative transportation decision-making processes is measured in terms of how well it solves the transportation problem, respects the community context and values, enhances quality of life, effectively uses resources, and satisfies stakeholders.*

#### Section 4.1 – What Can Communication, Collaboration, and Consensus Accomplish?

#### Section 4.2 – What are the Opportunities for Collaboration? What Does a Collaborative Partnership Look Like?

#### Section 4.3 – What are Some Challenges to Collaboration?

#### Section 4.4 – What are Successful Methods and Strategies for Collaboration and Consensus-building?

#### Section 4.5 – How can we Measure the Effectiveness of Processes and Solutions?

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## CHAPTER 4: GOING THE DISTANCE TOGETHER—PARTNERSHIP THROUGH COLLABORATION

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### Section 4.1 - What Can Communication, Collaboration, and Consensus Accomplish?

**“There are 3.9 million miles of roads in this nation, 75% owned by local governments. So transportation is something we are deeply involved in. As a local official, I need to figure out how we engage people so that they are willing to invest in transportation and the future of this country.”**

**- Hon. Colleen Landkamer, President  
National Association of Counties**

In order for practitioners to understand the context, shape the best solutions possible, and improve quality of life, they must practice good communication skills that inspire collaboration and result in consensus. This communication may take many forms, ranging from informal discussions at a social function where practitioners and citizens see each other to more formal processes such as interviews, surveys or advisory committees. This chapter explores how practitioners and citizens can work collaboratively to co-create solutions that reflect community values as well as meet professional responsibilities. It will present examples that demonstrate the benefits of collaborative partnerships, including how to address challenges associated with collaboration and overcoming barriers to meaningful dialogue. Some effective methods and strategies

for collaboration are provided in this chapter, as well as ideas on how to go about measuring successful collaboration.

*Collaboration* is defined as “cooperating with others in a joint endeavor or area of mutual interest, in order to influence or affect the outcome.” Rather than simply transmitting information, collaboration aims for active cooperation to achieve consensus. With consensus as collaboration’s goal, there are several dynamics that occur:

- Sharing of information leads to mutual education; this in turn provides the basis for crafting workable and acceptable alternatives.
- Joint thinking among participants in a diverse group leads to creative solutions.
- Improved chance of successful implementation because everyone participates in the deliberations, understands the reasoning behind the chosen solution, and is willing to support it.

A number of essential principles underlie the practice of consensus and contribute to its success:

- To achieve consensus, everyone in the group must actively participate.
- To participate fully and freely, all group members must have a common base of information and keep up to date on the progress of the group.
- The group must create and maintain an atmosphere in which everyone feels free to state his or her views and to disagree.
- Disagreements must be respected; they can illuminate unrecognized problems and serve as a catalyst for improving the decision.
- When someone objects or disagrees, the goal of the group is to discover the unmet need that has produced the objection and to find a way to meet that need in a revised agreement, rather than to suppress the objection.

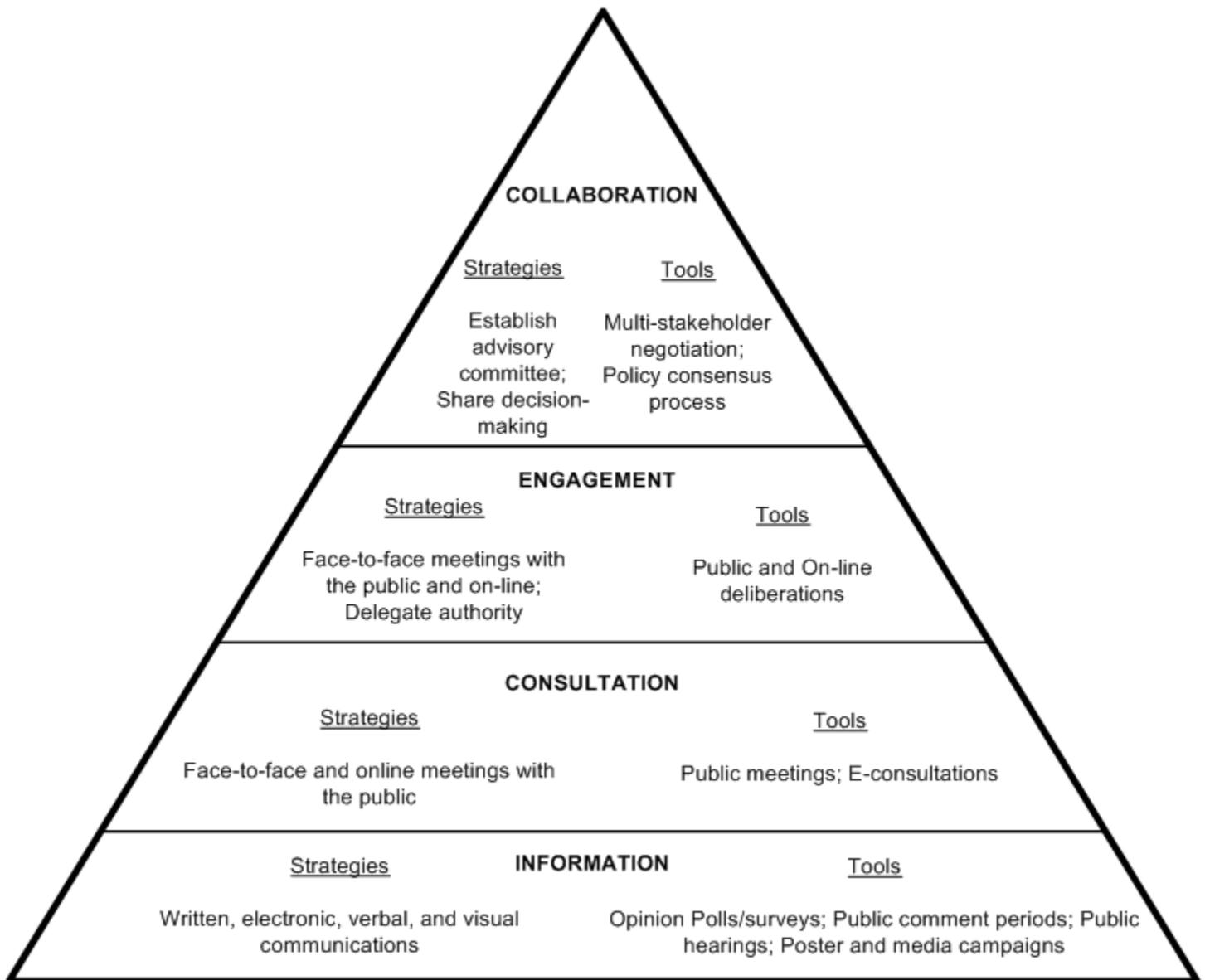
The emphasis on consensus, communication, and collaboration in CSS is not accidental - meaningful, sustained public engagement in transportation decision-making saves time, money and achieves a better product. For example, when DOT funding is insufficient, engaging in collaboration with external stakeholders to form partnerships can gain access to additional funding from other sources. Working with citizens can be as basic as sharing information, or as meaningful as inviting them to

participate in the decision-making. Increasing levels of public involvement can be described as:

- *Information* – exchange of information raises awareness’s, generates, policy momentum, and collects public opinion.
- *Consultation* – processing information to educate the public, stimulate public debate, clarify values, and broaden the information base.
- *Engagement* – Basic or advanced shared decision making to involve citizens in problem solving and decision making, and building capacity for implementation.
- *Collaboration* – Build capacity for lasting cooperation among groups and policy implementation through the entire project’s lifespan through shared ownership.

In some cases, “information” can be an acceptable level of public involvement, for example when the goal is simply to enhance public awareness of an issue. In other cases, higher levels of engagement are more appropriate. The range of tools and techniques used to engage the public varies significantly depending on the level of engagement desired.

### Levels of Public Involvement



In many cases, information, consultation, or even engagement may not be enough. The benefits to collaboration exceed these other levels of public involvement greatly, improving:

- Project Delivery – In many cases, information or engagement may not be able to meet the project delivery goals for a project, particularly those with controversial elements. Collaboration can help to create public support for a transportation initiative, and may even be the original basis for the project itself. It can also help to define the project's scope to meet the transportation, community, environmental, and fiscal realities within that community.

**Collaborative processes can reveal and solve different project priorities - for the transportation professionals it may be time-savings, but for the local community it may be pedestrian and child safety.**

*Adapted from "Public Deliberation: A Manager's Guide to Citizen Engagement." Carolyn J. Lukensmeyer, Lars Hasselblad Torres, 2006. [http://www.whitehouse.gov/files/documents/ostp/opengov\\_inbox/ibmpubdelib.pdf](http://www.whitehouse.gov/files/documents/ostp/opengov_inbox/ibmpubdelib.pdf)*

- Stakeholder/Public Trust - When stakeholders and citizens have a significant role in project development, this can generate greater project ownership/identification. Stakeholders and citizens must not only believe that they have significant project input, but also they must trust the final decisions and resulting actions of the transportation agency. When this occurs, stakeholder/public opinion about the transportation agency improves, creating a reservoir of goodwill and trust for future transportation projects.
- Maintenance and Operations – Proper consideration of the full life-cycle of a transportation project can greatly enhance the lifespan and success of a transportation project. Furthermore, in many cases, maintenance and operations staff are the main transportation point of contact for local communities. The planning staff may be there for the creation of a transportation facility, but the maintenance and operation staff are there for the next twenty, thirty, or forty years, serving that community.

**Collaboration can contribute to greater stakeholder awareness of issues and the competing points of view that surround those issues, and citizen involvement through policy deliberation creates the opportunity to problem-solve and improve their own circumstances by impacting policies that affect them. Deliberation and collaboration thus builds public capacity for solving public problems within communities over time, reducing the community's dependence on outside resources.**

*Adapted from "Public Deliberation: A Manager's Guide to Citizen Engagement."*

- Environmental, economic, and social equity impacts of transportation investments – Collaboration can help identify and include these considerations into the decision-making process. Furthermore, when stakeholders understand the tradeoffs involved in decisions, their informed perspective only improves their understanding of—and contribution to—decision-making.
- Cost-effectiveness – This can include direct cost-savings, such as right-sizing facilities and saving on materials, and indirect cost-savings, such as reduced avoidance actions, minimizing the need for mitigation.

**Collaboration can re-engage citizens in the political life of the nation by giving them a real stake in outcomes and, as a result, reverse long-term declines in political and civic engagement. Such effects are not trivial, as they lie at the heart of a thriving nation.**

*Adapted from "Public Deliberation: A Manager's Guide to Citizen Engagement."*

- Safety and mobility for all users – A project's primary purpose and need often includes improving safety. No solution would be acceptable that reduced safety for any users of the facility. Collaboration often results in the identification of new issues and opportunities, such as enhanced modal options to address safety and mobility of multiple types of users.
- Quality of life and economic development- Successful collaboration improves the overall quality of life for members of a community by decreasing delays, providing new mobility options, and/or improving safety for roadway users, pedestrians, residents and others.

The foundation of CSS collaboration is a robust and meaningful public involvement process. There are many excellent public

involvement guides available that are consistent with the philosophy of collaboration that practitioners can draw from to support their CSS collaboration. A few of these include:

- Minnesota Department of Transportation, “Hear Every Voice” Public and Stakeholder Participation Guidance <http://www.dot.state.mn.us/planning/publicinvolvement/>
- Michigan Department of Transportation, Guidelines for Stakeholder Engagement [http://www.michigan.gov/documents/mdot/MDOT\\_Guidelines\\_For\\_Stakeholder\\_Engagement\\_264850\\_7.pdf](http://www.michigan.gov/documents/mdot/MDOT_Guidelines_For_Stakeholder_Engagement_264850_7.pdf)
- New York State Department of Transportation, Public Involvement Manual [http://environment.transportation.org/pdf/context\\_sens\\_sol/PublicInvolvementManual.pdf](http://environment.transportation.org/pdf/context_sens_sol/PublicInvolvementManual.pdf)
- Florida Department of Transportation, Public Involvement Handbook [http://www.dot.state.fl.us/emo/pubs/public\\_involvement/pubinvolve1.shtm](http://www.dot.state.fl.us/emo/pubs/public_involvement/pubinvolve1.shtm)
- FHWA, Public Involvement Techniques for Transportation Decision-Making <http://www.fhwa.dot.gov/REPORTS/PITTD/cover.htm>

### **MaineDOT and Local Communities Engage to Retain Community Character**

Source: Adapted from Transportation Research Board, NCHRP Project 8-36, Task 86 Final Report, *Corridor Approaches to Integrated Transportation and Land Use*. (June 2009). [http://onlinepubs.trb.org/onlinepubs/archive/notesdocs/NCHRP08-36\(86\)\\_FR.pdf](http://onlinepubs.trb.org/onlinepubs/archive/notesdocs/NCHRP08-36(86)_FR.pdf).

**Issue:** Route 1, as a regional arterial and economic lifeline for the midcoast Maine area, was reaching capacity as the population grew and development accelerated. While, originally, MaineDOT wanted to only address the transportation issue through traditional widening of the arterial, midcoast residents wanted a more collaborative approach that would focus planning on the corridor as a whole.

**Approach:** In response, MaineDOT initiated the Gateway 1 process—a long-term strategic planning project for the midcoast Route 1 region that sought to find a way to combine municipally-based land use and state-based transportation planning. MaineDOT worked with midcoast Maine residents on a collaborative corridor planning entity that integrated community involvement with proactive land use and transportation planning. The goal of Gateway 1 is to “preserve mobility while enhancing safety, transportation choice, economic strength, and quality of life along the corridor.” In the first phase of the project, MaineDOT concentrated on establishing trust with the communities in the corridor so there would be support during the planning process. In the second phase, an action plan of scenarios and strategies was developed that MaineDOT and the communities could use to achieve the goals of Gateway 1. Currently underway is the implementation phase, helping communities adopt the Gateway 1 plan into local plans.

**Result:** The willingness of MaineDOT to dynamically change its approach for creating transportation solutions to one that was collaborative with the localities has created a multidisciplinary work environment that uses consensus building and negotiation skills to balance transportation, environment, and neighborhood development. MaineDOT’s patience and persistence to create trust with the communities and between the communities, as well as its resistance to rush the process to follow a schedule, was a process that all agreed was a wise investment in time and resources.

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## CHAPTER 4: GOING THE DISTANCE TOGETHER—PARTNERSHIP THROUGH COLLABORATION

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### Section 4.2 - What Are the Opportunities for Collaboration? What Does a Collaborative Partnership Look Like?

The way a team plays together as a whole determines its success. You may have the greatest bunch of individual stars in the world, but if they don't play together, the club won't be worth a dime."

- Babe Ruth

Citizen perspectives are many and varied, and incorporating them into transportation decision-making processes can be a challenge. Practitioners' transportation expertise is essential in planning and designing transportation facilities, but this expertise must be balanced with the preservation or enhancement of the community context. Collaboration can play an important role in allowing citizens and practitioners to bring their unique skills and perspectives together to arrive at a shared solution to transportation problems.

As discussed in [Section 2.3](#), interdisciplinary teams are one way that practitioners, citizens, and other stakeholders can work together to resolve seemingly irreconcilable differences, needs and perspectives. However, interdisciplinary teams are not the only method for collaborating with stakeholders. [Section 4.4](#) provides more information on specific methods and strategies that can be used to encourage or facilitate collaboration.

#### **Collaboration on the Chattanooga Riverfront Parkway Leads to Financial Partnership**

*Source: SHRP II C08: Linking Community Visioning and Highway Capacity Planning, The Louis Berger Group, 2009.*



Collaboration is all about creating an opportunity and place for people to come together to address issues. Some ways to create this collaboration is to use clear, common-sense language to talk about possible solutions without predetermining the outcome, conduct public negotiations that integrate contending interests, and create agreements about what we're are willing to do and under what conditions and then take action. The City of Chattanooga's 2001 Riverfront Parkway Transportation and Urban Design Plan is one piece of a larger city-wide effort for revitalization that began in the 1980s through a comprehensive visioning process – based on these collaboration strategies.

The major points of the Plan were developed during an intensive three-day collaborative workshop. The sponsor, The RiverCity Company, a private not-for-profit organization focused on downtown Chattanooga revitalization, managed and financed the creation of the Riverfront Parkway Transportation and Urban Design Plan. RiverCity Company's board of directors includes the City and County mayors as well as other prominent public and private-sector representatives. The RiverCity Company invited a broad spectrum of public and private partners to participate in the development of this plan. Participants included the City of Chattanooga and Hamilton County, State and Federal agencies, area foundations, the Tennessee Department of Transportation, the University of Tennessee, the Chattanooga Fire Department, Siskin Hospital, Friends of the Festival, adjacent property owners and companies that use Riverfront Parkway to move freight.

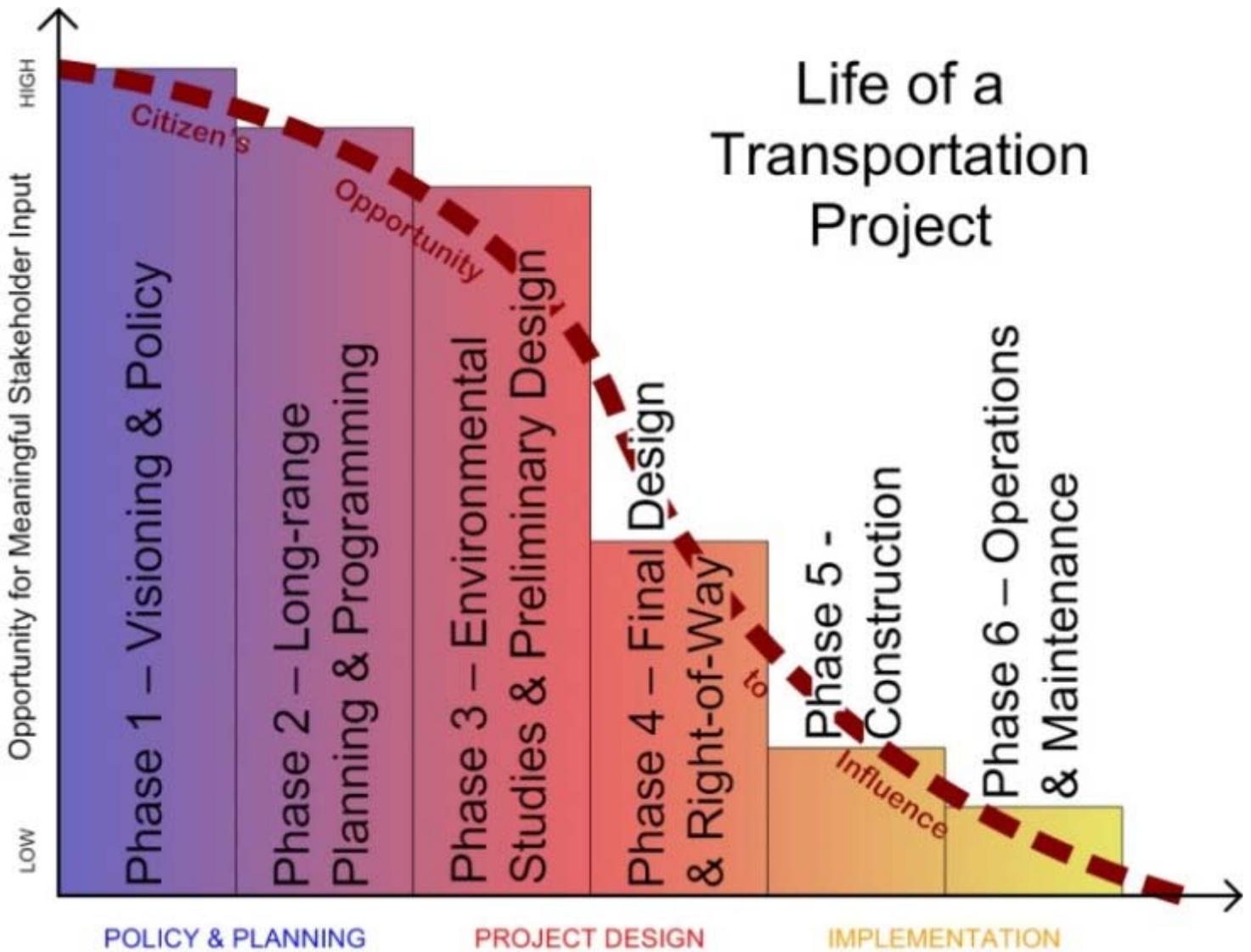
The plan resulted in the redesign of Riverfront Parkway from a high-speed access-limited highway into a true waterfront street that brings value to downtown and provides local community access. With the expenditure of approximately \$68,000 in consultant fees, RiverCity's time, and volunteer time from the Mayor and stakeholders, the RiverCity Company

and Mayor Bob Corker were able to leverage the consensus reached through the visioning process to secure \$60 million in private and foundation contributions (about half of the total funding needed) to finance the rerouting of Riverfront Parkway, developing new housing and creating new green spaces and public art along the waterfront. The remaining \$60 million was financed through debt backed by revenue anticipated over time through a new hotel/motel tax. These improvements in turn attracted hundreds of millions of dollars in new downtown and waterfront investment. In addition, the implementation of the Riverfront Parkway Transportation and Urban Design Plan led directly to the creation and implementation of the 21<sup>st</sup> Century Waterfront Plan, a \$120 million investment in further riverfront revitalization.

Because the planning process involved a full range of stakeholders in a fully collaborative partnership, the solution achieved addressed the entire context and many sources saw that solution as a tangible benefit to them. As a result, those sources were willing to “own” (literally and figuratively) the result, contributing substantially to the cost of implementing the plan. These types of collaborative financial partnerships are increasingly important in an era of underfunded state departments of transportation. The conversion of the Parkway has been regarded as one of the most notable success stories of a community-led effort of reclaiming an outdated highway infrastructure into one of the catalysts that led to the rebirth of a medium-sized city.

[Click here for more information](#)

The graphic below shows the general relationship between the phases of the life of a transportation project and the opportunities available for meaningful stakeholder input. As shown, citizens and other stakeholders have opportunities to participate throughout the transportation decision-making process, but they have the greatest ability to influence outcomes when they are involved in the early phases.



Collaboration is possible at all phases of decision-making, as shown in [Chapter 3](#), starting from policy creation to daily operations and local maintenance. Phase #1 (Policy and Visioning) presents an opportunity for stakeholders to influence “big picture” decision-making, but decisions made at this phase do not generally get down to the level of discussing specific projects. The two phases that are particularly well-suited and are designed to engage the community and citizens on specific plans and projects are Phase #2 (Long-range Planning & Programming) and Phase #3 (Environmental Studies & Preliminary Design). These phases are the ripest time for collaboration to occur successfully within the transportation decision-making process. Within each of these phases, there are specific decisions that provide a significant opportunity for collaboration, as both practitioners and citizens bring different data and information to the partnership.

	<b>PHASE #2: LONG-RANGE PLANNING &amp; PROGRAMMING</b>	<b>PHASE #3: ENVIRONMENTAL STUDIES &amp; PRELIMINARY DESIGN</b>
<b>Decisions Made</b>	<ul style="list-style-type: none"> <li>• Determine transportation deficiencies</li> <li>• Determine financial assumptions for planning</li> <li>• Identify strategies to address deficiencies</li> <li>• Determine preferred planning scenario</li> <li>• Determine evaluation criteria and methodology for evaluating transportation projects</li> <li>• Identify funding sources for transportation projects</li> </ul>	<ul style="list-style-type: none"> <li>• FHWA and DOT determine which type of environmental study to pursue</li> <li>• Reach agreement on purpose and need for project</li> <li>• Selection of a range of feasible/reasonable alternatives</li> <li>• Selection of a preferred alternative</li> <li>• Agreement on avoidance, minimization, and/or mitigation options for preferred alternative</li> </ul>
<b>Opportunity for Collaboration</b>	To integrate the community's perspectives on its context, vision, values, and goals into transportation plans and programs. This includes identification and consideration of a wider range of potential approaches to create transportation solutions that will both meet transportation needs and enhance the community's quality of life.	To involve citizens in the identification and consideration of alternatives and project design elements that will meet the transportation purpose and need while enhancing the community's quality of life.
<b>Practitioner Contribution to Collaboration</b>	Practitioners bring a diverse range of professional interdisciplinary expertise, as well as data and technical information needed to inform the decision-making partners.	
<b>Citizen Contribution to Collaboration</b>	Citizens bring their understanding of the community context, as well as their values and perspective on what they want their community to be, including perspective on how the transportation system should function and what it should look like.	

For more information on the decisions made during each phase of the life of a transportation project, [click here](#).

### ***Who can practitioners collaborate with?***

Ultimately, who practitioners can and should collaborate with depends on the context. One crucial element is the scope of the proposed improvement(s) and size of the geographic area it affects. Large scale planning efforts require a significant level of collaboration and large group of different stakeholders. Smaller initiatives may just need the local community representative. In general, stakeholders are those that have a direct or indirect interest in your decisions, including:

- People who are affected positively by the results of the project — **the beneficiaries**
- People who might be adversely affected by the proposed project — **the nearby property owners, residents, and businesses, including those affected by changes in traffic patterns**
- Agencies that share regulatory authority with DOT — **environmental and resource agencies, state, tribal, and local governments**

- People who care about the project from a policy perspective — **the advocates**

On particularly large or complex projects, a Public Involvement Specialist should help identify stakeholders as part of the development and implementation of a proactive public engagement plan.

***Additional Case Study Resources:***

**[Border Crossing Study at Blue Water Bridge](#)** – Michigan Department of Transportation

**[Libby North Corridor Study](#)** – Montana Department of Transportation

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## CHAPTER 4: GOING THE DISTANCE TOGETHER—PARTNERSHIP THROUGH COLLABORATION

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### Section 4.3 - What are Some Challenges to Collaboration?

**“In a high-trust society, there’s more for everyone. We have more options and opportunities. We interact with less friction, resulting in greater speed and lower cost.”**

**- Stephen Covey**

If collaboration were easy, then everyone would be doing it across all transportation projects. Just because it is not easy, that does not mean it is not worth pursuing. There are some common barriers to collaboration that may seem insurmountable at first, but really are solvable. Some of these are agency protocols that inhibit collaboration, while others are communication problems. Some of the recurring challenges to collaboration include:

- Different communication styles
- Different attitudes toward conflict
- Different approaches to completing tasks
- Different decision-making styles
- Different attitudes toward disclosure
- Different approaches to knowing

Resource Link: [Working on Common Cross-cultural Communication Challenges](#)

Regardless of the specific issue causing trouble, other practitioners have been there before and have overcome these barriers successfully.

Common Challenges to Collaboration	Strategies to Overcome these Challenges
Length and technical complexity of long-range transportation planning and NEPA processes	Educate the public during the stakeholder process about transportation project delivery.
Practitioners and/or citizens are basing their participation on their “positions” rather than their “interests”	Ensure that the DOT staff are using <b>interest-based collaboration skills</b> by communicating transportation and quality of life interests and being open to creative solutions that will meet those interests; use facilitation and listening skills to elicit citizen interests.
Insufficient stakeholder involvement	Engage in a clear and deliberate stakeholder identification and public involvement/collaboration process, using a public involvement professional if necessary.
Ineffective communication with the public	Develop a proactive approach to communication that is based on the principle of open, honest exchange of information and ideas; provide basic listening and communication training to all technical staff; select outreach tools and methods that are appropriate for the target audience.
Inconsistent or incomplete collaboration – commitments made during planning or environmental studies do not follow through into design, construction, or maintenance	Establish clear documentation standards for practitioners in planning and environmental studies; implement a commitment tracking process to ensure that this documentation is carried forward as a part of the project record.
Inflexible application of design standards inhibits development of creative solutions	Review design standards for flexibility and provide training and support to designers in using design flexibility to fit transportation improvements to the community context.
Effort perceived as “gold-plating” projects, adding expensive non-transportation features to a project	Implement clear and transparent policies for incorporating these features into projects, or encourage stakeholder partnership to maintain these features.

## What Keeps Us Apart?

Source: Facilitating Conciliation, The Canadian Institute of Cultural Affairs, 2000

- **“I am an Island.”** As social diversity and globalization impinge more deeply, individuals and groups struggle to assert their own selfhood and identity. To this end, they develop their own sets of principles, values, approaches and solutions which can easily become rigid. We define ourselves in a certain way and everything else is “something else.”
- **“Them and Us.”** Society is poor in processes that unite rather than divide. We have developed the tension between opposites into a high art-form. We see ourselves as right, and others simply wrong, or at best, inadequate. We are not trained in the mental agility that is able to see two, three or four sides of an argument at the same time.
- **“Let’s Get Together and Fight.”** Any interchange over any topic is traditionally approached as a debate. No wonder we experience an increasing inability to come to consensus. Trying to resolve a dispute with another dispute, even disguised as mediation, is not likely to create lasting solutions. Disharmony prevails and we scratch our heads in wonder.
- **“I Heard What I Said.”** We report on many conversations by telling people what we said. Truly hearing a different perspective is not easy when the roar of our own thoughts drowns everything else out. Individuals and groups retreat to the bunker of their own perspective and spend the whole time pushing that and not listening to anything else. Ships pass in the night.
- **“Who’s Got the Power?”** Our relationships and social systems are based, all too often, on power relationships. Resolving difficulties and making decisions has become a matter of gaining or manipulating enough power to have one’s own way. People have not been educated to use power in a way that honors and pulls together the creativity of others into approaches that benefit all concerned.
- **“We Need to Find a Solution and I’ve Got It.”** We tend to approach a lot of our conversations with our positions blazing. We arrive with answers rather than questions. It seems exceedingly difficult to dialogue deeply enough to take the conversation beyond the positions that individual parties bring to the table. If the door is closed; the door is closed.

The [Transportation for Communities: Advancing Projects through Partnerships \(TCAPP\)](#) website contains a “collaboration assessment” diagnostic tool to help practitioners understand ways to improve collaboration in their own transportation decision-making processes, and is a valuable resource.

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## CHAPTER 4: GOING THE DISTANCE TOGETHER—PARTNERSHIP THROUGH COLLABORATION

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### Section 4.4 - What Are Successful Methods and Strategies for Collaboration and Consensus-Building?

**“I can't change the direction of the wind. But I can adjust my sails.”  
- Unknown**

Over the last twenty years, public agencies have increasingly invested in public involvement and engagement. There is a rich body of literature and guides available (see links at end of this section) that can help practitioners enhance their current public involvement process. Collaboration with citizens, however, goes beyond involvement or engagement. Fundamental to collaboration is the basic ability to use good communication skills. The Florida Department of Transportation has developed a short guide that provides tips and strategies for good communication, whether the communication is with cooperative or difficult people.

#### **Dealing with Difficult People**

Source: Florida Department of Transportation

When dealing with diverse audiences and controversial topics, we often come across people that are difficult. During workshops, presentations and public hearings, a citizen's anger is usually situation-oriented, but it may feel as though it is directed at you personally. Becoming defensive, trying to cut the complaint short, or even arguing back are not productive responses and often prolong the uncomfortable atmosphere. Every contact provides an opportunity to improve your relationship with the public.

**This module** has been prepared to suggest ways to stay calm and be confident, thus being more responsive to citizens. Topics include: dealing with a hostile situation, effective communication, seven difficult personality types, roadblocks to communication, and nine ways to build trust and credibility.

In recent years, as public agencies have sought to become more skilled in collaborating with citizens, more innovative methods and strategies have been applied. Those described in this section have been employed successfully in transportation planning and project development/delivery, including:

- Strategic Partnerships
- Facilitated Discussion
- Charrettes
- Interactive Analysis
- Social Media

As with many elements in this guide, these techniques are context-specific – the key is finding the right strategy for your specific transportation, environmental, community and fiscal context.

#### ***Strategic Partnerships***

Strategic partnerships are voluntary collaborations between agencies and other organizations or entities formed to achieve a common purpose. Typically these occur because each of the partners has capabilities or resources that the partner agency may not have – these may be fiscal, or institutional, or relationship-based. The key to a strategic partnership is the identification of a mutually-beneficial outcome and a commitment to the partnership needed to achieve it. The Maricopa Association of Governments (Phoenix, AZ) established a strategic partnership to support the development of its long-range

plan.

### **Maricopa Regional Transportation Plan Consensus Driven Effort to Balance Regional Needs**

Source: SHRP II C01: A Framework for Collaborative Decision Making on Additions to Highway Capacity, ICF International, 2009.  
<http://www.transportationforcommunities.com/>

With the most recent update of the Regional Transportation Plan, the Maricopa Association of Governments (MAG) established the Transportation Policy Committee (TPC) to guide its development. The TPC's 23 members include representatives from local governments, Indian tribes, ADOT, and the Citizen's Transportation Oversight Committee (CTOC). In addition, the TPC includes six representatives from the business community. These representatives were crucial to maintaining unity among the TPC as well as generating support from outside the TPC. The TPC was the main decision-making body for the development of the RTP. The TPC developed the RTP document in a process that included the establishment of goals, assessment of needs, selection of performance measures, development and analysis of alternatives, and the creation of an implementation plan with extensive public engagement. However, funding the RTP required the approval of both the state legislature and Maricopa County voters for its implementation. MAG's allies in the business community were instrumental in passing HB 2292 in 2003 and HB 2456 in 2004. These bills placed the TPC in state law, outlined certain parameters of the development of the plan, and authorized the county election for the sales tax. Governor Janet Napolitano also approved the RTP by signing both bills into law. The business community was again instrumental in passing Proposition 400 in the November 2004 election, which extended the half-cent sales tax through 2025.

Like many communities, transportation planning can be politicized and difficult in the Phoenix area. The involvement of the business community was essential to the success of the plan. Business leaders served as liaisons between MAG, lawmakers, and the public. They were the glue that held the collaborative framework together. MAG also took an integrated regional approach to planning projects and allocating funds. The agency prioritized the regional agenda over competing local agendas as much as possible. This attitude helped to build political consensus. MAG also strove to make the plan as functional as possible. Key elements of the plan were a robust policy framework, performance measures for monitoring of the plan, and strong fiscal management practices. These aspects of the plan particularly helped to win the support of lawmakers and the public. As a result of MAG's political and planning successes, the RTP dedicated a large proportion of funding for transit, against significant opposition.

Strategic partnerships must be initiated from the executive level of participating agencies. However, practitioners can play an essential role in the formation and support of strategic partnerships. They provide their agency executives with information about potential benefits of these partnerships, as well as providing the day-to-day implementation support needed to achieve success.

### ***Facilitated Discussions***

Facilitated discussions are those conversations and meetings that employ the use of formal facilitators. The term "facilitator" literally means a person who makes progress easier. Facilitators are trained to remain neutral, focus on working with the group to achieve consensus or progress discussions by building trust among the group members. Facilitators have been trained in a variety of methods that can be used to structure group discussion to reduce conflict and promote mutual understanding and respect. Using a facilitator is a particularly good strategy when individuals, groups, or agencies engaged in the collaboration process are "stuck" on discussing their positions (as opposed to communicating their interests). Facilitators use a variety of communication, listening, and consensus-building strategies. The focused conversation method highlighted below is just one of these strategies.

### **Focused Conversation Method**

Source: Institute of Cultural Affairs

Using the Focused Conversation method creates authentic involvement in making decisions and taking action. Participants are invested in the outcome they helped generate and are more likely to follow through with the results. Focused conversation is a tool used to explore many facets of a question in order to design the most effective solution. A group of people work together to answer questions on four different levels. The conversation can be led by a facilitator or by a group member. The wisdom of each member of the group is accessed and together the group creates an answer to the question.

Following are the four levels of natural human process:

- **Objective** – Concrete things, actually observable by all. Questions in this stage focus on facts and external reality. They are designed to gather specific, observable information that pertains to the conversation. In our natural decision making process this would be manifested as observing a situation about which you will be making a decision. Example questions: What did you see? What did you notice about the project site?
- **Reflective** – Feelings, emotions, associations and memories. Questions in this stage focus on emotions and memories. Participants in the conversation are asked to reflect on the data they have just discussed during the objective level of the conversation. This piece of the process allows participants to acknowledge how they feel about a situation. Validation of personal feelings, moods, associations and memories is liberating and enables participants to move forward in the conversation. Without this opportunity participants will feel frustrated and may vent their feelings outside the meeting, which is counterproductive. In our natural decision making process, the reflective level of questioning is the emotional response. Example questions: What concerns you? Where are you confused?
- **Interpretive** – Meaning and significance. Questions in this stage get at the meaning of the topic for the group. Higher-level thinking skills are used to define the implications of the data for the group. The questions are often “why” questions and include questions pertaining to the value of the conversation and how it affects the participants outside the conversation. In the human decision-making process thinking through immediate options would reflect this stage. Example questions: What is the importance of this? What appears to be the central issue or key problem area?
- **Decisional** – Implications for the future: actions, decisions, choices. Questions in this stage are designed to make the conversation relevant for the future. As its name suggests, in this level the group makes decisions regarding implications of the conversation for the future. Example questions: What have we just decided? What are the first steps we need to take?

Although we all go through the natural process, each person has his or her own patterns and pace for coming to conclusions. There are no right or wrong patterns. There are only learned behaviors based on each person’s life experience. When a conversation has no structure, there is often no way to ensure that each person’s thinking patterns and insights can be dealt with or be used productively by the group. Conflict, chaos and discouragement often result.

## **Charrettes**

The National Charrette Institute (NCI) (<http://www.charretteinstitute.org/>) defines the term charrette as “...a holistic, collaborative planning process that harnesses the talents and energies of all interested parties to create and support a feasible plan.” In transportation planning, a charrette led by a professional designer trained in this method of group process can bring people together early in the project planning process to consider both constraints and a range of realistic options. ([See NCI Charrette System: Stories of Community Transformation DVD](#))

[The Charrette Center](#) describes a three-step timetable for urban planning charrettes in which small groups meet in intense multi-day meetings to define plans for their communities or to work on a design for a new facility in three steps, as outlined below.

- **Info Gathering:** The design team listens to the views of stakeholders and citizens while examining the project area and its context with the help of local experts. Issue identification workshops are held to discuss issues that the stakeholders

feel are important to the project. There is often a kickoff presentation the first evening.

- **Design and Review:** The design team, armed with this information, proceeds to collaborate about the best approaches for the area. Starting with general large-scale issues such as important natural features and development patterns, the debates and designs eventually evolve to fine-grained issues. At regular intervals, the public is invited to review the team's progress and then give comments on what they see. These intervals are usually complete design loops in which the cycle of info gathering, design & presentation repeat.
- **Presentation:** The charrette ends with a final presentation of designs and findings. The presentation is highly graphic with lots of drawings that communicate the team's recommendations. A final report or design manual that summarizes and illustrates the plan and design is then assembled and delivered to the community and the charrette sponsors. This document is used to help restate the goals identified during the charrette and to supply a guiding vision during implementation.

### ***Interactive Analysis***

Interactive analysis includes a whole suite of tools that allow practitioners and citizens to investigate different elements of their decision-making. If it is a larger planning effort, then this may be scenario planning or other public participation geographic information systems (GIS)-based efforts. If it is project, then this may entail visualization tools that make the project come to life through sketches, videos, or models – making more difficult concepts like lane width differences accessible to the public. Sometimes it can just be an approach that focuses on creating a vision for the future in a specific area.

[Click here](#) for examples of project-level visualizations developed by the Minnesota Department of Transportation.

#### **Meeting in a Box: Community Vision for the Aspen Area**

Source: Aspen Community Vision, [http://www.aspencommunityvision.com/page\\_1](http://www.aspencommunityvision.com/page_1)

In 2008, the City of Aspen and Pitkin County began work on an update to the community plan, and the creation of a 10-year community vision for the future, the Community Vision for the Aspen Area. The theme of this update is "Direct Democracy," and the goal is to involve as many people as possible -whether they live here, work here or enjoy the area on a part-time basis. The finished product will be the Community Vision for the Aspen Area: a foundational document for the Aspen City Council and Pitkin County Board of Commissioners - providing guidance for future decisions on issues ranging from Housing to Managing Growth to Transportation.

There is no standing committee to guide this process. A standing committee is no longer used to guide the process, as one was used in the past, because both City and County staff observed that it wasn't inviting or accessible enough for a wide cross-section of people to become directly involved, and to ultimately "buy-in" to the final product. Instead, this new process seeks to literally draft a document that comes from the community-at-large. For example, the process included three large public meetings and about 450 people attended these meetings. Also, 534 people responded to a randomly-mailed Community Survey.

This new public process began with the release of the State of the Aspen Area report in September 2008, which is packed with information on a range of key community issues. A white paper on The Aspen Economy, a 40-page document reviewing the history and evolution of the local economy, was released in October 2008. The idea is to encourage a well-informed citizenry as we begin to focus on the major issues of the day. The next steps were small group meetings - 174 people attended 20 meetings that focused on 10 topics. Almost 40 high school students took part in separate sessions as well. Participants were asked to voice their goals for the future of the Aspen Area. Those who were not able to participate in a small group meeting could express their opinion using our blog or a "Meeting in a Box."

"Meeting in a Box" is a self-guided and individually hosted workshop that can be presented by any club, service organization, neighborhood group or group of friends in the privacy of one's home. The materials in the box were developed by professional facilitators who ran a series of small group meetings earlier in the community visioning

process. The "Meeting-in-a-Box" is more free-form and appeals to a wider range of the public than other public involvement efforts. Additionally, the attraction of holding an informal meeting in an environment where the participants would feel comfortable with friends, neighbors, and peers enabled an open dialogue that contributed valuable information

#### **What's in the box?**

1. Instructions
2. A set of 10 colored cards identify 10 topics, and provide some background information on each topic. Your group can decide to focus on any topic you wish, or 3 or 5 or all 10.
3. A document titled "How To Build Your Vision," which includes prompting questions that ask you to envision the Aspen area 10 or more years from now.
4. Pens and Notepads
5. Popcorn for you and your group

The multimedia materials contained in the Meeting in a Box appeal to a wider range of the public than other public involvement efforts. Additionally, the attraction of holding an informal meeting in an environment where the participants felt comfortable with friends, neighbors and peers assisted in creating an open dialogue that does not often occur in a traditional public meeting format. The organizers, in turn, get valuable information they need to understand the context of the project and public opinion.

### ***Social Media***

Social media involves a whole host of evolving online communication tools that are accessible to the public. This may include such items for public involvement as:

- Information distribution – through general listserves, podcast/audiocasts, RSS feeds, etc.
- Consultation efforts - through online surveys, blog dialogues, Facebook/Twitter, etc.
- Engagement – wikis for project management, or public involvement exercises, such as photo contests, etc.
- Collaboration – creating an online community to complement and support the active and real-time traditional public involvement, such as public meetings, etc.

#### **MySpace for transportation planning.**

Source: NCDOT, Best Practices and Tools for Public Involvement in Comprehensive Transportation Planning and Merger Processes

When soliciting public input for Mobility 2035, the Metropolitan Transportation Plan update for San Antonio and Bexar County, Texas, a consultant working on behalf of the MPO created a Myspace profile for the project. Using the search engine provided by the service, the consultant actively searched for residents and added them as friends of the project. Residents could then approve or reject the friendship of the project. Those that accept friendship received comment updates with information about the public outreach effort.

### ***Additional Resources for More Collaboration Methods and Strategies:***

[LENS Method – Leadership Effectiveness/New Strategies](#) – Tips for open communication. *Source: Institute of Cultural Affairs*

#### ***External Web Links***

Minnesota Department of Transportation, "Hear Every Voice" Public and Stakeholder Participation Guidance  
<http://www.dot.state.mn.us/planning/publicinvolvement/>

**Michigan Department of Transportation, Guidelines for Stakeholder Engagement**

[http://www.michigan.gov/documents/mdot/MDOT\\_Guidelines\\_For\\_Stakeholder\\_Engagement\\_264850\\_7.pdf](http://www.michigan.gov/documents/mdot/MDOT_Guidelines_For_Stakeholder_Engagement_264850_7.pdf)

**New York State Department of Transportation, Public Involvement Manual**

[http://environment.transportation.org/pdf/context\\_sens\\_sol/PublicInvolvementManual.pdf](http://environment.transportation.org/pdf/context_sens_sol/PublicInvolvementManual.pdf)

**Florida Department of Transportation, Public Involvement Handbook**

[http://www.dot.state.fl.us/emo/pubs/public\\_involvement/pubinvolve1.shtm](http://www.dot.state.fl.us/emo/pubs/public_involvement/pubinvolve1.shtm)

**FHWA, Public Involvement Techniques for Transportation Decision-Making**

<http://www.fhwa.dot.gov/REPORTS/PITTD/cover.htm>

**Environmental Protection Agency Tools for Public Involvement**

<http://www.epa.gov/publicinvolvement/involvework.htm>

**Cultural Affairs' Technology of Participation courses**

<http://www.ica-usa.org/index.php?pr=coursestop>

**International Association for Public Participation**

<http://www.iap2.org/>

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## CHAPTER 4: GOING THE DISTANCE TOGETHER—PARTNERSHIP THROUGH COLLABORATION

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### Section 4.5 - How Can We Measure Effectiveness of Process and Solutions?

#### *Why measure the effectiveness of processes and solutions?*

**“Money is not real. It is a conscious agreement on measuring value.”**  
- John Ralston Saul

Transportation project development and delivery, in general, benefits greatly from assessing the effectiveness of previous work. Understanding what went wrong (and what went right) in the development and delivery process can lead to streamlining and retooling policies and procedures in the future, which cuts costs and gets jobs finished faster. Measuring how well a particular solution functions in real-world conditions, in terms of its safety and efficacy at moving traffic, can provide valuable

insight to future designs. Measuring the process and the solution is not a new idea, many state DOTs have some sort of formal performance measures.

Collaborative processes are no different – they should be measured in order to inform institutional practices for better results over time. The difference is the form that measurements take. Quantifying quality of life benefits to the community can be very difficult. Some proxy measurements are available, and qualitative evaluations are also helpful. This section will present several examples of ways to measure the effectiveness of collaborative processes and solutions, with links to additional resources and examples of state DOTs that have incorporated CSS into their performance measurement.

#### *How can we measure effectiveness?*

Performance measurement can come in many forms, from a relatively simple, generalized list of qualitative questions to a rather complex list of quantitative measurements. Following are some examples of qualitative assessments of CSS:

#### **The ultimate test of CSS is whether it succeeds in producing a result that:**

- Solves the transportation problem without creating new problems;
- Respects the physical context and community values;
- Enhances quality of life including public health, safety and welfare;
- Makes effective and efficient use of all resources including professional and citizen involvement; and
- Satisfies the majority of the stakeholders involved in the process.

#### **Five Keys to a Context Sensitive Project:**

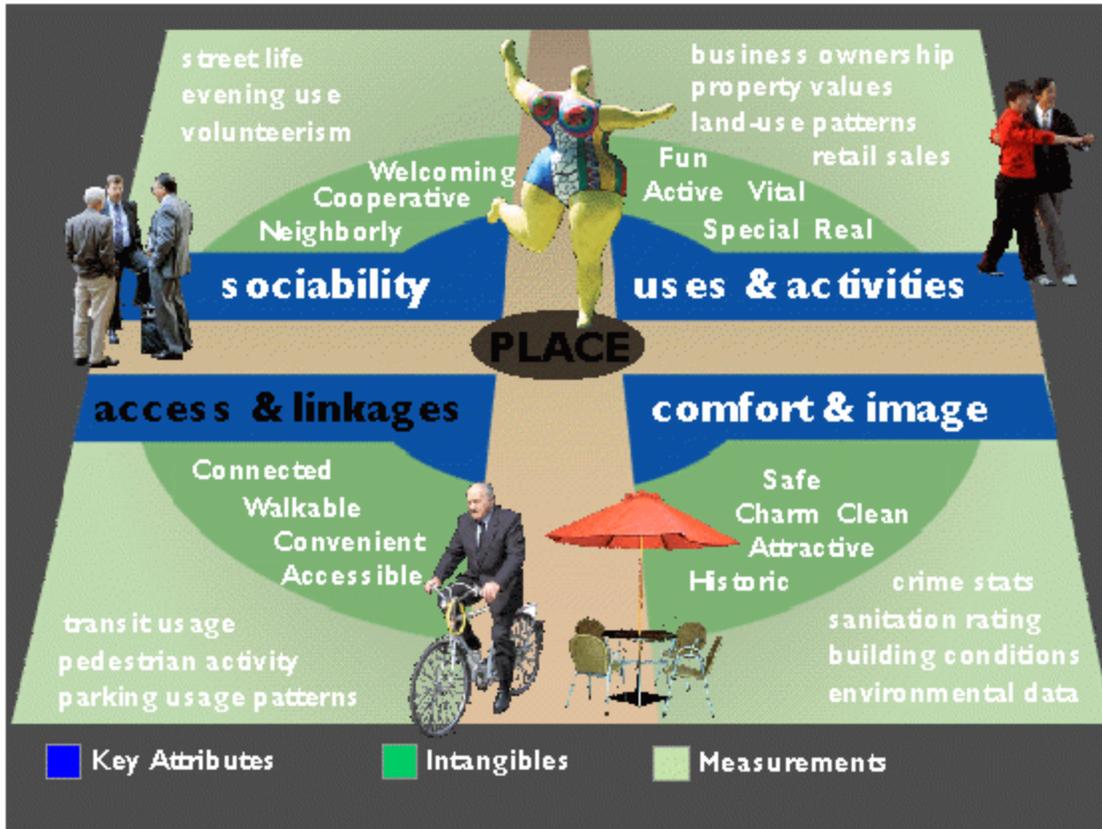
1. Does it reflect community values?
2. Is it environmentally sensitive?
3. Is it safe?
4. Is it feasible (constructible, financially)?
5. Have stakeholders been included in the decision process?

*Source: Ahola, Adam. 2006. Context Sensitive Solutions. Western Federal Lands 2006 Contractor Conference, Spokane, Washington. Slide 3.*

These qualitative assessments, however, are challenging because their generality means that they can be answered differently by different people – for example, some community members may not agree with the DOT that the project “respects the physical context and community values”. Without numbers to back up the assertion, they may not be taken seriously by some people.

While it may seem difficult to quantify many of the quality of life benefits of CSS, there are measurements that can serve as proxies to quantify some of the aspects of CSS. The diagram from Project for Public Spaces below is an excellent example of how goals and intangible aspects of a community can be translated into measurements. While these measurements may not completely encapsulate the quality of life differences (some qualitative evaluation may still be needed), they can go a long way to back up assertions of CSS performance and show real effects to the community.

**Quantifying the Power of Place (Project for Public Spaces)**



Additional examples of these types of proxy measurements are included in Table 4.5.1 below.

**Table 4.5.1 - Example Quantitative Measures**

<p><b>Traffic Measures</b></p> <ul style="list-style-type: none"> <li>• Peak hour LOS (intersection)</li> <li>• Screen line capacity (at “X” segments throughout the corridor)</li> <li>• Volume/capacity (at “X” segments throughout the corridor)</li> <li>• Corridor travel times between selected origins and destinations</li> <li>• Reduction in existing VMT</li> <li>• Multi-modal uses (bicycle and pedestrian infrastructure)</li> <li>• Desired travel speeds in defined areas</li> </ul>	<p><b>Safety Measures</b></p> <ul style="list-style-type: none"> <li>• Speed vs. probability of killing a pedestrian</li> <li>• Reduction in number of driveways</li> <li>• Reduction in unprotected left turns</li> <li>• Potential safety improvements at documented high-crash locations</li> <li>• Median that meets certain criteria</li> <li>• Shoulders that meet certain criteria</li> </ul>
<p><b>Cultural and Aesthetic Measures</b></p> <ul style="list-style-type: none"> <li>• Town streetscape</li> <li>• Visual preference surveys</li> <li>• Historic resources</li> <li>• Open space/parklands</li> <li>• Property values</li> <li>• Available cultural amenities</li> </ul>	<p><b>Economic Measures</b></p> <ul style="list-style-type: none"> <li>• Employment accessibility</li> <li>• Land use mix</li> <li>• Travel costs</li> <li>• Business revenues (tax revenue)</li> <li>• Economic equity</li> <li>• Diverse, locally-owned and operated businesses</li> <li>• Eco-tourism</li> </ul>
<p><b>Social Measures</b></p> <ul style="list-style-type: none"> <li>• Monetary giving</li> <li>• Civic engagement and volunteerism</li> <li>• Trust</li> <li>• Government institutions</li> <li>• Levels of health and happiness (perceived)</li> <li>• Social interactions</li> <li>• Walkability</li> <li>• Well-designed open spaces</li> </ul>	<p><b>Environmental Measures</b></p> <ul style="list-style-type: none"> <li>• Climate change/emissions</li> <li>• Habitat protection/fragmentation</li> <li>• Air pollution</li> <li>• Noise pollution</li> <li>• Water pollution</li> <li>• Resource efficiency</li> <li>• Land use impacts</li> </ul>
<p><b>Access and Mobility Measures</b></p> <ul style="list-style-type: none"> <li>• What percentage of existing car trips are converted to non-auto trips?</li> </ul>	<p><b>Health Measures</b></p> <ul style="list-style-type: none"> <li>• Rates of: hypertension, obesity, diabetes, asthma, heart disease, cancer, injury, depression, and infectious diseases</li> </ul>

Table 4.5.2 below describes in detail four major research efforts that provide extensive description, examples and how-to for DOTs desiring to measure the performance of CSS.

**Table 4.5.2: Research with Extensive Guidance on CSS Performance Measures**

<b>Quantifying the Benefits of Context Sensitive Solutions (NCHRP Report 642, Project 15-32, 2009)</b>	
<b>Link</b>	Report: <a href="http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_642.pdf">http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_642.pdf</a> . Appendices: <a href="http://www.trb.org/Publications/Blurbs/Quantifying_the_Benefits_of_Context_Sensitive_Solu_162282.aspx">http://www.trb.org/Publications/Blurbs/Quantifying_the_Benefits_of_Context_Sensitive_Solu_162282.aspx</a>
<b>Summary</b>	The primary outcome of this research effort is a practical set of recommended practices for transportation professionals to use for assessing benefits of a completed CSS project. To achieve this goal, a set of guidelines was developed that would clearly demonstrate the metrics to be used with each principle. It is also reasonable to assume that there may be some relative importance among the benefits gained from implementation of CSS principles for a variety of reasons, including ease of data collection, data availability, resources required, and level of commitment. The guidelines developed consider these issues and identify the benefits and their associated metrics in a manner that allows for prioritization. This approach provides an agency with the ability to do a basic or targeted evaluation.
<b>Direct Applicability</b>	Lists 22 benefits from implementing CSS and correlates them with the 15 CSS principles. Guidelines document (attached at end of PDF file) describes in detail how each of the 15 principles can be applied in specific phases of a transportation project, specific benefits to be realized from implementing the principle, indicators (measurements) that can quantify the benefits, and case studies of where DOTs have implemented the principle. The guidelines document also includes several case studies treated in detail, where the indicators were actually applied and calculated to quantify benefits, describing how that quantification process was completed. This report would be very useful to a DOT interested in enhancing its existing performance measures to better address CSS, as it provides very detailed information on how to go about implementing such measures.

**Performance Measures for Context Sensitive Solutions - A Guidebook for State DOTs**  
(NCHRP Document 69, 2004)

<b>Link</b>	<a href="http://www.trb.org/publications/nchrp/nchrp_w69.pdf">http://www.trb.org/publications/nchrp/nchrp_w69.pdf</a>
<b>Summary</b>	<p>This guidebook is intended to help DOTs develop their own tailored and comprehensive CSS performance measurement programs. The approaches discussed in the guidebook are suitable both for agencies that are just beginning to pilot use of CSS on a handful of projects and those that are implementing CSS for all projects. No list of individual measures is provided in the guidebook – nor do most practitioners who participated in its preparation recommend such an approach. Rather a framework for organizing measures is described, and key focus areas for measurement are discussed. Agencies are expected to develop their own individual measures that are tailored to specific needs and are encouraged to pick and choose the components of the framework and measure focus areas that make sense for their state.</p>
<b>Direct Applicability</b>	<p>This guide is a more generalized discussion of performance measures, without directly applicable quantifiable measurements. It has useful discussions of general performance measurement program structure, and the distinction between project-level and organization-level measures. Includes sections on:</p> <ul style="list-style-type: none"><li>• Guiding Concepts for CSS Performance Measurement Programs – This section offers DOTs a framework for organizing measures that addresses CSS-related processes and outcomes at the project-level and organization-wide, and provides an understanding of some basic principles for measurement of CSS performance;</li><li>• Project-level Focus Areas – This section describes how agencies can assess performance of individual projects or groups of projects by targeting key focus areas, and gives pointers for potential performance measures in each focus area;</li><li>• Organization-wide Focus Areas – This section describes focus areas that agencies should target as they assess overall organizational performance, and gives pointers for potential performance measures in each focus area; and</li><li>• Tips for Getting Started – This section provides a few suggestions on creating and using a CSS performance measures framework.</li></ul>

**Guidelines for Environmental Performance Measures**  
*(NCHRP Project 25-25, Task 23, 2008)*

<b>Link</b>	<a href="http://www.trb.org/NotesDocs/25-25(23)_FR.pdf">http://www.trb.org/NotesDocs/25-25(23)_FR.pdf</a>
<b>Summary</b>	<p>Although DOTs have been addressing environmental considerations for many years, environmental concerns are taking on even greater importance; the scope of environmental issues considered relevant to transportation is increasing; and the environmental focus is expanding from project-based assessments to the consideration of environmental issues in operations, maintenance, planning, and policy-level decisions. This report examined this shift in conjunction with the expansion of performance-based strategic management within DOTs. Over the past decade, agencies have adopted a more systematic approach to identifying the vision, goals, and performance measures to guide agency planning and decision-making. As environmental issues gain momentum, so does the need to identify performance measures that can connect agency goals with outcomes. The product of this project is practice-oriented and includes a “library” of examples and possible environmental performance measures. Through an analysis and synthesis of current practices, the report provides an overall framework and guidance for the selection and implementation of environmental performance measures that can reflect different agency goals, organizational management structures, and data availability. The intent is to provide usable products for those interested in furthering the systematic consideration of environmental factors in agency planning, operations and management decision-making.</p>
<b>Direct Applicability</b>	<p>Since the report was focused specifically on environmental performance measures, the usefulness of the performance measures in the report will be most relevant to that phase of a transportation project, although there will also be limited applicability to other phases. The report details the environmental performance measures of thirteen agencies, spending several pages describing each. These include environmental benefit agreements; green or environmentally sensitive design, construction, maintenance, and operations practices; and environmental stewardship practices. These practices are immediately available for adoption or adaptation by other state DOTs and MPOs. The report also describes several emerging areas of interest that have the potential to impact future environmental performance measurement. The report would be useful for providing examples of performance measures specifically related to the environmental phase of project development, which DOTs could adopt or adapt for their own uses.</p>

<b>Non-traditional Performance Measures: AASHTO Peer Exchange Series</b> <i>(NCHRP Project 8-36 (53)(2), 2006)</i>	
<b>Link</b>	<a href="http://www.transportation.org/sites/planning/docs/NCHRP%208-36(53)(2)%20NonTraditional%20Perf%20Measures.pdf">http://www.transportation.org/sites/planning/docs/NCHRP%208-36(53)(2)%20NonTraditional%20Perf%20Measures.pdf</a>
<b>Summary</b>	<p>On July 12 and July 13, 2005, the Non-Traditional Performance Measures Peer Exchange was the second in a peer exchange series held as part of National Cooperative Highway Research Program (NCHRP) Project 8-36, Task 53 – Peer Exchange of Best Practices on State and Metropolitan Transportation Planning Issues. The goal of the peer exchange was for individuals from various agencies to discuss how non-traditional performance measures are used in their transportation planning and decision-making processes. Non-traditional performance measures for the purposes of this discussion are defined as: “those measures or indicators of either transportation system performance or of phenomena external to the transportation system (but which are affected by transportation system operations) that are not commonly used in transportation planning.” Non-traditional performance measures often relate to subjects not under the control of a transportation agency, but which might be considered important to monitor, for example ecosystem health or economic development.</p>
<b>Direct Applicability</b>	<p>Since the peer exchange discussion was focused specifically on transportation planning, the usefulness of the performance measures in the report will be limited to that phase of a transportation project. The peer exchange involved representatives of ten DOTs and transportation agencies and focused discussion on performance measures of: Customer Satisfaction, Economic Development, Energy and Resource Conservation, Environmental Justice, Environmental Quality, Freight Transportation, Quality of Life, Security, and Sustainability. The report includes responses from the ten participants on the specific performance measures they currently use related to each category, in addition to some general discussion about barriers to increased use of these types of measures by other DOTs. The report would be useful for providing examples of performance measures specifically related to transportation planning, which DOTs could adopt or adapt for their own uses.</p>

***Additional examples of measuring the benefits and impacts of CSS:***

- Washington State DOT Accountability and Performance Information: Gray Notebook. Includes a variety of traditional and nontraditional performance measures. <http://www.wsdot.wa.gov/Accountability/>
- Florida DOT Mobility Measures <http://www.dot.state.fl.us/planning/statistics/mobilitymeasures/> and Evaluation of the Effectiveness of Public Involvement Programs (from the Public Involvement Handbook) [http://www.dot.state.fl.us/emo/pubs/public\\_involvement/Chap%2010%20Evaluation%20Of%20The%20Effectiveness%20Of%20PI%20Programs.pdf](http://www.dot.state.fl.us/emo/pubs/public_involvement/Chap%2010%20Evaluation%20Of%20The%20Effectiveness%20Of%20PI%20Programs.pdf)
- New Mexico DOT “Guide to Context Sensitive Solutions.” 2006. Incorporates measures for each phase of project development including operations and maintenance. [http://www.nmshtd.state.nm.us/upload/images/environmental\\_urban\\_design\\_unit/NM\\_Guide\\_to\\_Context\\_Sensitive\\_Solutions.pdf](http://www.nmshtd.state.nm.us/upload/images/environmental_urban_design_unit/NM_Guide_to_Context_Sensitive_Solutions.pdf)
- PennDOT and NJDOT “Smart Transportation Guide.” 2008. Includes discussion of the quantifiable benefits of smart transportation. <http://www.smart-transportation.com/assets/download/Smart%20Transportation%20Guidebook.pdf>
- State DOT Performance Measurement Library <http://www.wsdot.wa.gov/Accountability/Publications/Library.htm>
- “Community and Social Benefits of Transportation Investment.” January 2002. *NCHRP Project 8-36, Task 22*

*Demonstrating Positive Benefits of Transportation Investment.*

[http://www.transportation.org/sites/planning/docs/nchrp22\\_3.pdf](http://www.transportation.org/sites/planning/docs/nchrp22_3.pdf)

- “Taking the High Road: The Environmental and Social Contributions of America’s Highway Programs.” 2003. AASHTO Center for Environmental Excellence. <http://environment.transportation.org/pdf/HighRoad/HighRoad-Full.pdf>
- “Above and Beyond: The Environmental and Social Contributions of America’s Highway Programs.” January 2008. AASHTO Center for Environmental Excellence. [http://environment.transportation.org/pdf/above\\_beyond\\_0108.pdf](http://environment.transportation.org/pdf/above_beyond_0108.pdf)
- “Performance Measurement Framework for Highway Capacity Decision Making.” 2009. SHRP CO2 Capacity Project [http://onlinepubs.trb.org/onlinepubs/shrp2/shrp2\\_pb\\_c02\\_a.pdf](http://onlinepubs.trb.org/onlinepubs/shrp2/shrp2_pb_c02_a.pdf)
- “Integrating Context Sensitive Solutions into Transportation Practice.” 2009. FHWA. [http://www.contextsensitivesolutions.org/content/reading/integrating\\_context\\_sensitive\\_s\\_/resources/Integrating\\_CSS\\_into\\_Transportation\\_Practice\\_Guide.pdf](http://www.contextsensitivesolutions.org/content/reading/integrating_context_sensitive_s_/resources/Integrating_CSS_into_Transportation_Practice_Guide.pdf)

### **What should practitioners do with the results of performance measurement?**

The purpose of taking the time to evaluate the effectiveness of CSS, whether qualitatively or quantitatively, is ultimately to use that information to make improvements to the CSS process and solutions for future projects. Without some information on the performance of past projects, it is difficult for practitioners or executives wishing to improve their CSS implementation to know precisely where improvements need to be made. The graphic below illustrates how the feedback cycle works:

## **CSS Process & Solution Evaluation**



For example, performance measurement can aid in the improvement of institutional practices in the following ways:

- Trend analysis across projects – What problems are most common? What is going well?
- Sharing lessons learned – Staff learning from each other’s mistakes
- Ideas for policy and procedure improvements to streamline or make the implementation of CSS easier

To be most effective, performance measurement needs to be established when a project begins—based on the context, community values, and project purpose—rather than attempting to do it after the fact. Collecting information during the project using pre-established criteria requires much less cost and effort than doing so after the fact. In addition, some information is simply impossible to collect after the project is complete unless it has been foreseen.

Because quantification of quality of life benefits is difficult, performance measures may not be a perfect reflection on the CSS process and solutions. However, the act of evaluating can be in itself useful as it will stimulate discussion among practitioners of lessons learned and ideas for improvement.

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## AFTERWORD

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The end of this guidebook does not mark the end of your journey with CSS, but rather the beginning. This guide is intended to serve as an invaluable reference for practitioners as they wrestle with the challenging issues of transportation decision-making. But in the end, the guidebook is only as useful as *you* and other transportation practitioners make it. In addition to this guide, and its companion [Citizen's Guide](#), a wide variety of resources are available on Context Sensitive Solutions. Some key resources include:

- [A Guide to Building CSS Knowledge and Skills for Successful Project Delivery](#)
- [Integration of Context Sensitive Solutions in the Transportation Planning Process](#)
- [Context Sensitive Solutions.org](#)
- [AASHTO Center for Environmental Excellence, Context Sensitive Solutions site](#)
- [FHWA Context Sensitive Solutions site](#)

Take this guide and make it yours - the collaborative decision-making described here *cannot happen without you!*

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## APPENDIX: RESOURCE LINKS

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### [Chapter 1](#)

### [Chapter 2](#)

### [Chapter 3](#)

### [Chapter 4](#)

#### [Chapter 1 Resources](#)

[Above and Beyond - The Environmental and Social Contributions of America's Highway Programs](#)

[America's Top Five Transportation Headaches - and Their Remedies](#)

[Arizona Rt. 179 - Valuing a Unique "Sense of Place" \(Presentation given at the AASHTO/FHWA Peer Exchange: CSS at Baltimore, CD\)](#)

[Community and Social Benefits of Transportation Investment](#)

[Eco-Logical - An Ecosystem Approach to Developing Infrastructure Projects](#)

[Integrating Context Sensitive Solutions in Transportation Planning - New Hampshire Transportation Business Plan \(Case Study in the "Integration of Context Sensitive Solutions in the Transportation Planning Process Final Report\)](#)

[Long Range Strategic Issues Facing the Transportation Industry - Final Research Plan Framework \(NCHRP 20-80 Task 2\)](#)

[Moving Communities Forward: How Well-Design Transportation Projects Make Great Places](#)

[NCHRP Report 480 - A Guide to Best Practices for Achieving Context Sensitive Solutions](#)

[On Transportation & Shaping Landscapes, Cities, & Lives](#)

[Practitioner Disciplines Involved in Transportation Decision-making](#)

[Press Release - 50 Projects Vie for America's Top Transportation Awards](#)

[Public Roads - Building Public Trust](#)

[Report Says Public Outreach, Done Right, Aids Policymaking](#)

[State DOT Context Sensitive Solutions Survey - Report to Members](#)

[Streets as Places - Using Streets to Rebuild Communities](#)

[The Fallacy of Freeways](#)

[Transportation - Are We There Yet?](#)

[Transportation - Invest in our Future - A New Vision for the 21st Century](#)

[Well Measured - Developing Indicators for Comprehensive and Sustainable Transportation Planning](#)

[You Told Us...What the new President and Congress should know about transportation](#)

#### [Chapter 2 Resources](#)

[Alternative Strategies and Measures](#)

[A Resident's Guide for Creating Safe and Walkable Communities](#)

[Above and Beyond - The Environmental and Social Contributions of America's Highway Programs](#)

[Audit Tool Analytic Version](#)

[Audit Tool Checklist Version](#)

[Audubon New York, American Kestrel Project](#)

[Beautiful Roads - A Handbook of Road Architecture](#)

[Bicycle and Pedestrian Program website](#)

[Building Projects that Build Communities - Recommended Best Practices](#)

[Community Assessment](#)

[Community Context Audit For Transportation Projects](#)

[Community Effects Considerations](#)

[Community Impact Assessment website](#)

[Compendium of Environmental Stewardship Practices in Construction and Maintenance](#)

[Context Definition Questions for Citizens](#)

[Context Definition Questions for Practitioners](#)

[Context Sensitive Solution - Western Federal Lands \(Presented at 2006 Contractor Conference in Spokane, WA\)](#)

[Context Sensitive Solution Guide](#)

[Context Sensitive Solutions in Designing Major Urban Thoroughfares for Walkable Communities](#)

[Context Tool Table](#)

[Eco-Logical - An Ecosystem Approach to Developing Infrastructure Projects](#)

[Efficient Transportation Decision Making Program, Florida](#)

[EPA, Tools for Public Involvement](#)

[FDOT, Public Involvement Handbook](#)

[FHWA, Public Involvement Techniques for Transportation Decision-making](#)

[Great Corridors, Great Communities: The Quiet Revolution in Transportation Planning](#)

[Institute of Cultural Affairs, Technology of Participation courses](#)

[International Association for Public Participation](#)

[Life of a Transportation Project](#)

[Making Your Community Walkable and Bikeable - A Guidebook for Change](#)

[MDOT Guidelines for Stakeholder Engagement](#)

[Measuring Urban Design Qualities - An Illustrated Field Manual](#)

[MnDOT, Hear Every Voice](#)

[Moving Communities Forward: How Well-Design Transportation Projects Make Great Places](#)

[NCHRP 25-25/Task 62](#)

[NCHRP Synthesis 373 - Multi-Disciplinary Teams in Context-Sensitive Solutions](#)

[NYS DOT, Public Involvement Manual](#)

[Peterborough Transportation Management - West Peterborough Road Audit](#)

[Place Game - Place Performance Evaluation](#)

[Placemaking through Transportation](#)

[Planning for Transportation in Rural Areas](#)

[Practitioner Disciplines Involved in Transportation Decision-making](#)

[Process Evaluation Questions for Practitioners](#)

[Public Health Workbook to Define, Locate and Reach Special, Vulnerable, and At-Risk Populations in an Emergency draft](#)

[Route 50 Corridor Coalition](#)

[Scenic Byways - A Design Guide for Roadside Improvements](#)

[Smart Growth Checklist - A Checklist for Municipal Land Use Planning and Management](#)

[Smart Growth Checklist - A Checklist for Proposed Development Project in Your Community](#)

[Smart Transportation Guidebook](#)

[Squeaky Wheel: Third-grader Successfully Makes the Case for a Safe Mullan Road Bike and Pedestrian Pathway](#)

[SR-12 Escalante to Boulder, Utah](#)

[Streets as Places - Using Streets to Rebuild Communities](#)

[Sustainable Transportation Indicators - A Recommended Program To Define A Standard Set Of Indicators For Sustainable Transportation Planning](#)

[The Community Tool Box website](#)

[The Roles of Practitioners in Different Disciplines and Phases](#)

[Thinking Beyond the Pavement Checklist](#)

[Traffic Calming Benefits, Costs and Equity Impacts](#)

[Transportation for Communities: Advancing Projects through Partnerships](#)

[Transportation - Visioning for Communities](#)

[TRB Special Report 282 - Does the Built Environment Influence Physical Activity? Examining the Evidence -- Special Report 282](#)

[TRF Policy Map](#)

[Understanding Community Context](#)

[VDOT Route 50 Project](#)

[Volunteer City Transportation Improvements](#)

[Walkability Checklist - How walkable is your community?](#)

[Walking Suitability Assessment Form \(V.040802\) - Developed by James Emery, MPH](#)

[Well Measured - Developing Indicators for Comprehensive and Sustainable Transportation Planning](#)

### **Chapter 3 Resources**

[2005 Maintenance Customer Survey Results](#)

[Alternative Strategies and Measures](#)

[A Citizen's Guide to Better Streets: How to Engage Your Transportation Agency](#)

[A Citizen's Guide to the NEPA - Having Your Voice Heard](#)

[A Guide for Achieving Flexibility in Highway Design](#)

[A Policy on Geometric Design of Highways and Streets \(5th ed.\)](#)

[A Resident's Guide for Creating Safe and Walkable Communities](#)

[Above and Beyond - The Environmental and Social Contributions of America's Highway Programs](#)

[ACHP - Section 106 Regulations Summary](#)

[An Evaluation of a Crosswalk Warning System Utilizing In-Pavement Flashing Lights](#)

[Beautiful Roads - A Handbook of Road Architecture](#)

[Best Management Practices for Construction and Maintenance Activities](#)

[Board News](#)

[Building Projects that Build Communities - Recommended Best Practices](#)

[Case Study Compendium](#)

[CDOT NEPA Manual - Chapter 7: Stakeholder Involvement Guidance and Public Involvement Plan](#)

[Compendium of Environmental Stewardship Practices in Construction and Maintenance](#)

[Context Sensitive Design Manual](#)

[Context Sensitive Solution - Western Federal Lands \(Presented at 2006 Contractor Conference in Spokane, WA\)](#)

[Context Sensitive Solution Guide](#)

[Context Sensitive Solutions in Designing Major Urban Thoroughfares for Walkable Communities](#)

[Context Sensitive Solutions in the Transportation Planning Process website](#)

[Controlling Factors in Each Phase of Transportation Decision-making](#)

[CSS & Multi-Disciplinary Teams \(Presented at the AASHTO/FHWA Peer Exchange; Context Sensitive Solutions in Baltimore, MD\)](#)

[CSS Quick Facts - Design Exceptions](#)

[Design Controls and Design Factors](#)

[Environmental Stewardship Practices, Procedures, and Policies for Highway Construction and Maintenance \(for NCHRP Project 25-25, Task 4\)](#)

[ETDM Library](#)

[FHWA Environmental Review Toolkit](#)

[FHWA Legislation, Regulations, and Guidance](#)

[Flexible Design for 21st Century Challenges: Balancing Competing Objectives and Optimizing Return on Investments Forum](#)

[Flexible Design of New Jersey's Main Streets](#)

[General Objectives of Traffic Calming](#)

[Geometric Design Practices for European Roads](#)

[Great Corridors, Great Communities: The Quiet Revolution in Transportation Planning](#)

[Guidelines for Stakeholder Engagement](#)

[Inside the Blackbox: Making Transportation Models Work For Livable Communities](#)

[Institutionalizing Flexibility in Transportation Design - Washington](#)

[Introduction](#)

[Liability and Street Reclaiming](#)

[Life of a Transportation Project](#)

[Main Streets: Flexibility in Design & Operations](#)

[Massachusetts Highway Department Project Development & Design Guide](#)

[MassHighway Project Development and Design Guidebook Document Overview presentation](#)

[Measuring Urban Design Qualities - An Illustrated Field Manual](#)

[Modification in Viewer Appreciation of Highway Landscape Following the Implementation of Ecological Management in Quebec, Canada](#)

[Moving Communities Forward: How Well-Design Transportation Projects Make Great Places](#)

[NCHRP 8-36, Task 47 - Effective Organization of Performance Measurement](#)

[NCHRP Report 480 - A Guide to Best Practices for Achieving Context Sensitive Solutions](#)

[NCHRP Report 612 - Safe and Aesthetic Design of Urban Roadside Treatment](#)

[NCHRP Synthesis 264 - Modern Roundabout Practice in the United States](#)

[NCHRP Synthesis 373 - Multi-Disciplinary Teams in Context-Sensitive Solutions](#)

[NEPA Implementation](#)

[Planning for Transportation in Rural Areas](#)

[Practical Solution Concepts for Planning and Designing Roadways in Kentucky](#)

[Practitioner Licensing Requirements and Codes of Conduct](#)

[Safety in Geometric Design Standards](#)

[Scenic Byways - A Design Guide for Roadside Improvements](#)

[Selected "Tools of the Trade" for Transportation Design](#)

[Showing the Fun in Engineering](#)

[Smart Growth Checklist - A Checklist for Municipal Land Use Planning and Management](#)

[Smart Growth Checklist - A Checklist for Proposed Development Project in Your Community](#)

[Smart Transportation Guidebook](#)

[Special Report 288 - Metropolitan Travel Forecasting - Current Practice and Future Direction](#)

[Street Design Manual](#)

[Summary of Environmental Legislation Affecting Transportation](#)

[Sustainable Transportation Indicators - A Recommended Program To Define A Standard Set Of Indicators For Sustainable Transportation Planning](#)

[Synthesis of Safety Research Related to Speed and Speed Limits](#)

[Talking the Talk - A Guide to the Language of Transportation Planning](#)

[The Roles of Practitioners in Different Disciplines and Phases](#)

[The Transportation Planning Process Key Issues - A Briefing Book for Transportation Decisionmakers, Officials, and Staff](#)

[The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970](#)

[The Use of Herbicides in Roadside Environments](#)

[Thinking Beyond the Pavement Checklist](#)

[Traffic Calming Benefits, Costs and Equity Impacts](#)

[Traffic Calming Measures](#)

[Transportation for Communities: Advancing Projects through Partnerships](#)

[Transportation Research Circular No. E-C097 - International Perspectives on Urban Street Design - Proceedings of the Context-Sensitive Design Workshop](#)

[Understanding Flexibility in the AASHTO Green Book: A Webinar on Geometric Design](#)

[Understanding Flexibility in Transportation Design Summary Document](#)

[Washington State DOT's Environmental Maintenance Accountability Process](#)

[What is Safe or Unsafe?](#)

[What is the Merger Process?](#)

[Will the Vision Overcome Liability Concerns?](#)

## **Chapter 4 Resources**

[7 Credibility Killers - And How to Avoid Them](#)

[A Citizen's Guide to the NEPA - Having Your Voice Heard](#)

[A leader who listens - Neil J. Pedersen's rules of the road](#)

[Above and Beyond: The Environmental and Social Contributions of America's Highway Programs](#)

[Aspen Community Vision](#)

[Best Management Practices for Construction and Maintenance Activities](#)

[Best Practices in Transportation Department Performance Measurement Structures](#)

[Better Decisions Through Consultation and Collaboration](#)

[Border Crossing Study at Blue Water Bridge Leads to Improved Community Relations and Creative Transportation Solutions](#)

[Building Projects that Build Communities - Recommended Best Practices](#)

[Case Digest - Protecting Historic Properties: Section 106 In Action](#)

[Citizen Participation in Decision Making: Is It Worth the Effort? Abstract](#)

[Communication, Collaboration, and Infrastructure](#)

[Community and Social Benefits of Transportation Investment](#)

[Context Sensitive Solution Guide](#)

[CSS Quick Facts - CSS Performance Measures](#)

[CTAP Organizational Structure](#)

[Decisions Made at Each Phase in the Life of a Transportation Project](#)

[DOT forms task force to build better relationships with communities](#)

[Environmental Stewardship Practices, Procedures, and Policies for Highway Construction and Maintenance \(for NCHRP Project 25-25, Task 4\)](#)

[EPA, Tools for Public Involvement](#)

[FDOT, Evaluation of the Effectiveness of Public Involvement Programs](#)

[FDOT Mobility Measures](#)

[FDOT, Public Involvement Handbook](#)

[FHWA, Public Involvement Techniques for Transportation Decision-making](#)

[Gridlock impossible at 'kitchen table'](#)

[Guide to Public Involvement for Programs, Planning and Projects](#)

[Guidelines for Environmental Performance Measurements](#)

[Guidelines for Stakeholder Engagement](#)

[Incentive-Based Approaches for Environmental Stewardship \(NCHRP 25-25, Task 50\)](#)

[Institute of Cultural Affairs, Technology of Participation courses](#)

[Integrating Context Sensitive Solutions into Transportation Practice](#)

[International Association for Public Participation](#)

[LENS Method: Leadership Effectiveness/New Strategies](#)

[MDOT, Guidelines for Stakeholder Engagement](#)

[Measuring Urban Design Qualities - An Illustrated Field Manual](#)

[Missouri Department of Transportation \(MoDOT\) Blanchette Bridge Reconstruction Project](#)

[MnDOT, Hear Every Voice](#)

[Module 6 - How to Deal Effectively with People](#)

[Monetary Valuation Per Dollar of Investment in Different Performance Measures \(NCHRP 8-36, Task 61\)](#)

[NCHRP 8-36, Task 86 Final Report, Corridor Approaches to Integrated Transportation and Land Use](#)

[NCHRP Report 480 - A Guide to Best Practices for Achieving Context Sensitive Solutions](#)

[NCHRP Synthesis 373 - Multi-Disciplinary Teams in Context-Sensitive Solutions](#)

[NMDOT, Guide to Context Sensitive Solutions](#)

[Non-traditional Performance Measures: AASHTO Peer Exchange Series](#)

[NYSDOT, Public Involvement Manual](#)

[Performance Measurement Framework for Highway Capacity Decision-making](#)

[Performance Measures for Context Sensitive Solutions- A Guidebook for State DOTs \(NCHRP 20-24, Task 30\)](#)

[Planning for Transportation in Rural Areas](#)

[Positions vs Interests](#)

[Public Deliberation: A Manager's Guide to Citizen Engagement](#)

[Public Involvement Techniques for Transportation Decision-making](#)

[Public Roads - Building Public Trust](#)

[Quantifying the Benefits of Context Sensitive Solutions](#)

[Report #7 in the Series: Moving Communities Forward - Synthesis](#)

[Report Says Public Outreach, Done Right, Aids Policymaking](#)

[Scenic Byways - A Design Guide for Roadside Improvements](#)

[Showing the Fun in Engineering](#)

[Smart Transportation Guidebook](#)

[State DOT Performance Measurement Library](#)

[Streets as Places - Using Streets to Rebuild Communities](#)

[Sustainable Transportation Indicators - A Recommended Program To Define A Standard Set Of Indicators For Sustainable Transportation Planning](#)

[Taking the High Road: The Environmental and Social Contributions of America's Highway Programs](#)

[The Asset-Based Community Development Institute](#)

[The Community Tool Box website](#)

[The Transportation Planning Process Key Issues - A Briefing Book for Transportation Decisionmakers, Officials, and Staff](#)

[Thinking Beyond the Pavement Checklist](#)

[Tools for Public Involvement](#)

[TR News - Going Public - Involving Communities in Transportation Decisions](#)

[TR News - Talk Is Cheap, Communication Priceless](#)

[TR News 220 - What is "Context-Sensitive Design"?](#)

[Transportation - Visioning for Communities](#)

[Transportation for Communities: Advancing Projects through Partnerships](#)

[Understanding the Communications and Information Needs of Elected Officials for Transportation Planning and Operations](#)

[Washington State DOT Accountability and Performance Information](#)

[Welcome to the Public Involvement Toolbox](#)

[Working on Common Cross-cultural Communication Challenges](#)

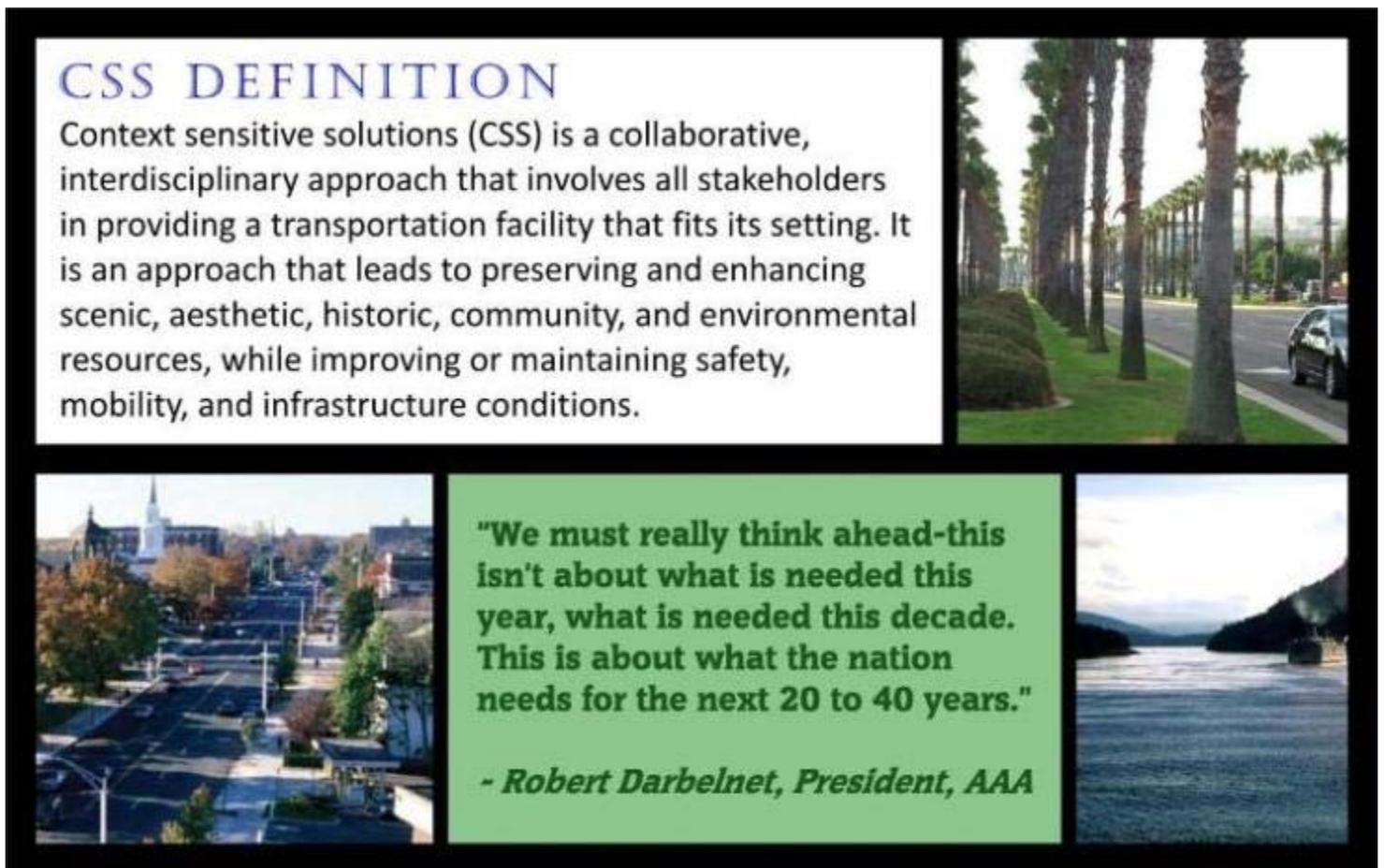
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## WHAT IS CSS?

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Since the [1998 Thinking Beyond the Pavement conference](#), Context Sensitive Design (CSD) has evolved into Context Sensitive Solutions (CSS) [\[link to milestones of CSS\]](#). Transportation agencies and their stakeholders have come to understand that the CSS process leads to [tangible benefits](#) that produce livable and sustainable outcomes. The process is founded upon collaborative decision-making strategies that engage a full range of stakeholders, including [interdisciplinary teams](#), to co-create solutions that solve transportation problems and support an improved [quality of life](#) for all citizens.

Following *Thinking Beyond the Pavement*, it became clear that CSS is about more than just design, and that collaboration among practitioners in different fields and between practitioners and citizens is a key element. A series of conferences, peer exchanges, reports, and guidance documents in subsequent years have allowed the national dialogue on CSS to continue. In 2007, AASHTO and FHWA released a joint CSS Strategic Planning Process Summary Report that contained a set of specific [principles, qualities, and outcomes](#) for CSS, which are presented in the graphics below.



**CSS DEFINITION**

Context sensitive solutions (CSS) is a collaborative, interdisciplinary approach that involves all stakeholders in providing a transportation facility that fits its setting. It is an approach that leads to preserving and enhancing scenic, aesthetic, historic, community, and environmental resources, while improving or maintaining safety, mobility, and infrastructure conditions.

**"We must really think ahead-this isn't about what is needed this year, what is needed this decade. This is about what the nation needs for the next 20 to 40 years."**

**- Robert Darbelnet, President, AAA**

Within the transportation industry, CSS has taken root as a business philosophy that reflects consensus-building strategies which lead to effective and efficient decisions and solutions. The report titled ["Quantification of the Benefits of CSS"](#) provides a framework for connecting CSS principles to indicators that can be measured by transportation agencies to evaluate their performance and demonstrate accountability to their customers. The overarching goal of CSS is to plan, develop, deliver, operate and maintain transportation infrastructure in a way that optimizes agency and stakeholder interests and needs. One of the key success factors for CSS implementation is finding common ground between citizens and practitioners, such that solutions are implementable and deliver on the promise of improved [quality of life](#) for all.

## CSS PRINCIPLES

*These core CSS principles apply to transportation processes, outcomes, and decision making.*



"The era of one-size-fits-all transportation projects must give way to one where preserving and enhancing unique community characteristics, be they rural or urban, is a primary mission of our work rather than an afterthought."  
*-Ray LaHood, Secretary, United States Department of Transportation. January 21, 2009.*



Foster continuing communication and collaboration to achieve consensus.

Exercise flexibility and creativity to shape effective transportation solutions, while preserving and enhancing community and natural environments.



Demonstrate a comprehensive understanding of contexts.



Strive towards a shared stakeholder vision to provide a basis for decisions.

While the [American Association of State Highway and Transportation Officials \(AASHTO\)](#) and the [Federal Highway Administration \(FHWA\)](#) have agreed upon a definition, principles, qualities, and outcomes associated with CSS these apply differently depending on the circumstances of individual projects. In addition, CSS is often viewed as a means to many different ends, including obtaining sustainable and livable transportation outcomes. It is also important to note that the process is applicable to all modes of transportation. The national clearinghouse for CSS information can be found at [www.contextsensitivesolutions.org](http://www.contextsensitivesolutions.org).

## CSS QUALITIES

*Context sensitive solutions is guided by a process which:*

Encourages agency and stakeholder participants to jointly monitor how well the agreed-upon process is working, to improve it as needed, and when completed, to identify any lessons learned.



Secures commitments to the process from local leaders.

Utilizes a clearly defined decision-making process.

Tracks and honors commitments through the life cycle of projects.

Involves a full range of stakeholders (including transportation officials) in all phases of a transportation program.



Encourages mutually supportive and coordinated multimodal transportation and land-use decisions.

*Transit plays an important placemaking role by spurring the kinds of people-friendly, business and community building activities that help rejuvenate places.*  
*- Project for Public Spaces, Inc. 2008. Streets as Places. Using Streets to Rebuild Communities.*



***What's in a Name: Other names related to CSS***

While most states have implemented new policies, practices and/or procedures that are consistent with CSS, what they do is not always called CSS. This can cause confusion, but it is the philosophy of CSS that is important, not the name. The following is a partial list of program names that are sometimes linked with CSS, but are not entirely equivalent to CSS. When practitioners encounter these terms, they should be aware of this potential connection, but should not take it for granted. Some of these policies may contain only certain elements that are related to CSS – for example, some may emphasize design flexibility but not necessarily reflect other key CSS principles such as collaboration among citizens, practitioners, and other stakeholders.

- **Livable Communities Initiative** (USDOT, HUD, EPA)
- **Context Sensitive Sustainable Solutions** (Oregon)
- **Transportation Design for Livable Communities** (Florida)
- **Stewardship Initiatives** (North Carolina)
- **Practical Design and Right Sizing** (Kentucky and Missouri)
- **Place Making** (Project for Public Spaces)
- **Sustainable Transportation Strategies** (AASHTO)
- **Community Sensitive Design** (Wisconsin)
- **Integrated Design** (AIA)
- **Urban Transportation Initiative** (Texas)
- Linking Planning and NEPA (Arkansas)
- **Smart Transportation** (New Jersey and Pennsylvania)
- **Complete Streets Initiatives** (ITE)

- Common Sense Solutions
- **Streamlining Initiatives** (FHWA)
- Practical Solutions (Missouri, Kentucky, Oregon)
- **Sustainability**

<h2>CSS OUTCOMES</h2> <p><i>Context sensitive solutions leads to outcomes that:</i></p>		
		<p>Demonstrate effective and efficient use of resources (people, time, budget,) among all parties.</p>
<p>Are in harmony with the community and preserve the environmental, scenic, aesthetic, historic, and natural resource values of the area.</p>	<p>Are safe for all users.</p>	<p>Meet or exceed the expectations of both designers and stakeholders, thereby adding lasting value to the community, the environment, and the transportation system.</p>
<p>Solve problems that are agreed upon by a full range of stakeholders.</p>		<p>The only way we are going to meet the transportation needs of our state is to be willing to change how we do business and to keep building and extending our partnerships. - <i>Connie Niva, Transportation Commissioner, Washington State DOT</i></p>
		

**CSS is Not:**

- Compromising safety or standards due to community pressure. CSS is a collaborative process among stakeholders, with the DOT ensuring safety and operational concerns are addressed.
- Spending considerably more money. Collaborating with parties interested in the project can also bring other sources of funding to the effort and produce a more comprehensive solution within shorter time frames and with fewer do-overs.
- Taking considerably more time. By using an effective outreach process, project issues can be identified and resolved early in a projects development. The alternative is a process where previously-ignored issues can derail a project late in the process.
- Creating winners or losers. With a successful outreach process, everyone is able to understand how the final solution was chosen.
- Listening to the loudest voices. A good process allows an opportunity for every voice to be heard.
- Doing what every stakeholder wants. A compromise for consensus is almost always required to reach a solution that best fits everyone's needs.

Source: AASHTO. 2007. *Driving to Success with CSS*. p2. Available online:  
[https://bookstore.transportation.org/Item\\_details.aspx?id=1045](https://bookstore.transportation.org/Item_details.aspx?id=1045)