NETWORK 81
DEFINING THE I-81 CORRIDOR

NOVEMBER 20, 2012

THE I-81 CORRIDOR COALITION IN COOPERATION WITH THE VIRGINIA TECH TRANSPORTATION INSTITUTE AND THE APPALACHIAN REGIONAL COMMISSION

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"By failing to prepare, you are preparing to fail."
Benjamin Franklin

EXECUTIVE SUMMARY

This project was envisioned the by Appalachian Regional Commission (ARC) as a result of the establishment of the I-81 Corridor Coalition. The Coalition is an organization involving New York, Pennsylvania, Maryland, West Virginia, Virginia, Tennessee, and counties and non-profit organizations in those states. The Coalition's focus is on safety, efficiency, and environmental sustainability of the transportation systems in the 855-mile corridor. The outcomes of this study include a map that defines the I-81 geographic corridor and a report on: access to transportation in Appalachia; perceptions of the dependence of industry and personal mobility in the I-81 Corridor as viewed by ARC's Local Development District (LDD) Directors and local government executives; and a "conceptual" vision of the priority opportunities for the transportation network that would better mesh it with I-81.

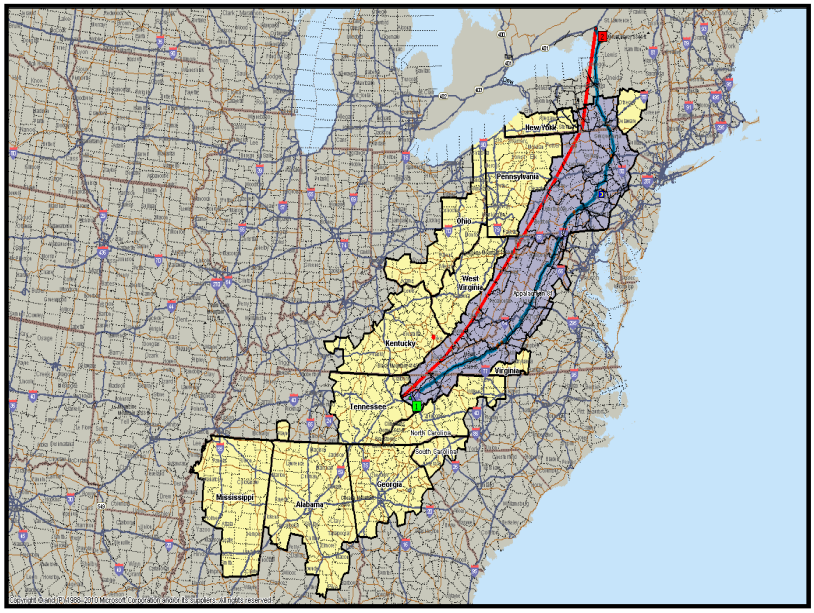
The body of the report contains three types of information:

1. A map of the I-81 corridor (shown in the adjacent map) which includes the geographic corridor in Appalachia;

2. An inventory of the major transportation features in the corridor, presented in Appendix C through H by a series of maps and lists of facilities.

3. A focus on opportunities to advance the existing and planned transportation systems focusing on the 3,090-mile Appalachian Development Highway System (ADHS), intermodal facilities, and rail systems.

The I-81 Corridor

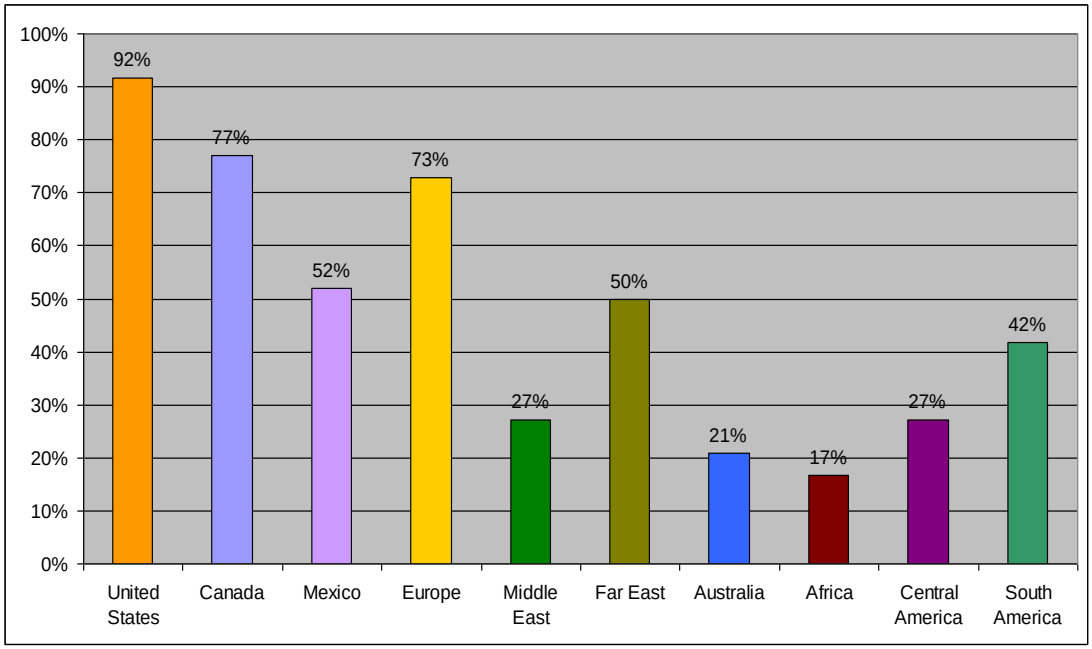


Readers should recognize that when defining a specific geographic corridor in Appalachia, areas outside the corridor may regularly use it to access the numerous east coast maritime ports as well as to serve as a convenient north/south corridor for trade within the North American Continent. For that reason, the borders of the I-81 corridor should be considered "fuzzy"—the entire Appalachian region

may use I-81 part of the time for purposes of trade or personal convenience. With the extent of international trade found in survey responses for this report, and shown in the figure below, it was difficult to draw a western boundary border.

With the near-term opening of the expanded Panama Canal, and the additional trade potential, it is likely that the I-81 corridor geographic region will become larger than is defined in this report.

Percentage of LLD Directors Reporting Trade to Regions of the World



The report is grounded in two surveys—one of LDD Directors and another of local government executives. The themes contained in the surveys were accessibility of I-81, dependence of industry and personal mobility on the use of I-81, need for improvements of transportation systems internal to Appalachia, and obstacles to those improvements. Appendix A contains a summary of the survey responses and maps showing the I-81 corridor within each state.

The conclusion of this project was intended to identify to the extent possible a "conceptual" vision for the I-81 Corridor. Six concepts are identified to better mesh the Appalachian transportation systems with the I-81 Corridor.

1. Advocate a Safer and More Efficient I-81 Interstate Highway
2. Develop a Consolidated and Collaborative Maintenance Plan for the Corridor
3. Further Research on the Impact of the Expanded Panama Canal on Appalachia
4. Complete ADHS System Gaps
5. Complete Corridor H.
6. Advocate Intermodal Yards and Proposed Elliston, Virginia Yard for Truck Freight

INTRODUCTION

In order to develop a transportation vision for a geographic area it is necessary to understand the current conditions and desired outcomes. Based on that understanding, it is possible to conceptualize the avenues through which a vision can be achieved by pursuing a particular course of action. Then the resulting plan requires defining a direction, allocating resources, and initiating an effort to pursue it.[1]

This project, funded by the Appalachian Regional Commission (ARC), with financial assistance from the Virginia Tech Transportation Institute (VTTI), is intended to present a strategic perspective for that vision. The principal objective in the assignment was to define the geographic area of the I-81 Corridor. The other objectives of the study were to outline a concept for the direction of the Appalachian transportation systems within that corridor.

That process has been done by soliciting information and perceptions of the current transportation systems from knowledgeable individuals (the ARC's Local Development District [LDD] Directors and local government executives). Perception is the organization, identification, and interpretation of sensory information in order to represent and understand the environment. The five sections of the report look at (1) access to I-81 for industry and personal mobility; (2) dependency on it for commerce; (3) identification of opportunities for improvements, (4) identification of obstacles to transportation improvements, and (5) a report on opportunities for strategic direction and priority transportation improvements that can better mesh Appalachian transportation systems with I-81.

The project builds on recently completed studies commissioned by the ARC which are described in *Network Appalachia: Access to Global Opportunity,* which states:

> *…how Appalachia's strategic location amidst some of America's strongest production centers and consumer markets positions it as a natural crossroads for domestic and international commerce. The growth in complex new international trade lanes in the 21st century and the expansion of the Panama Canal may present Appalachia with significant opportunities to broaden its commercial links with the nation and the rest of the world. The study presents a comprehensive transportation strategy to ensure the domestic and international market access necessary for Appalachia to successfully compete in the new global economy.*

This project was envisioned by ARC as a result of the establishment of the I-81 Corridor Coalition and the importance of the corridor to Appalachia. The Coalition is an organization involving New York, Pennsylvania, Maryland, West Virginia, Virginia, Tennessee, and several counties and non-profit organizations. The Coalition's focus is on safety, efficiency, and environmental sustainability of the transportation systems in the 855-mile corridor.

This report contains three types of information:

1. A map of the I-81 corridor. In this case, the corridor includes an area of influence in Appalachia with transportation systems that are used to achieve the region's goals set in law by the U.S. Congress.

2. A select inventory, presented in Appendix C through H by a series of maps and reference lists, of the major transportation system features within the I-81 corridor state by state. The maps and inventory are prepared from information contained in the Microsoft MapPoint dataset.

3. A list of priority conceptual improvements to advance the existing and planned transportation systems—focusing on the 3,090-mile Appalachian Development Highway System (ADHS), intermodal facilities, and rail systems.

I-81 borders Appalachia for its entire 855-mile length. As such, it is the only continuous north/south Interstate highway between Canada and mid-Tennessee on the East Coast which serves marine ports, north/south travel for commerce and personal mobility, and the Northeast Megalopolis for Appalachian products. Three other interstates in Appalachia have a combination of routes that serve north/south traffic: I-75, I-77, and I-79. However, I-81 is the logical transportation corridor to use for distribution of goods and products that are being shipped to the northeast and southeast metropolitan communities or to marine ports for shipment to foreign destinations.

Since I-81 is a rural route, it frequently serves as a long-distance truck bypass for I-95 around major areas of urban congestion in Richmond, Virginia, Washington, D.C., Baltimore, Maryland, and Philadelphia, Pennsylvania. There are numerous access points from Appalachian communities to I-81; 11 are on the ADHS. Of those, one proposed access point (Corridor H) has a major unfinished section which is planned to be a direct connection to I-81. Three others corridors (T, M, and Q), have unfinished segments that will make access to I-81 easier. Since the conceptual questions deal with opportunities for the ADHS to better mesh with I-81, completion of these segments are important not only for the ADHS but for intermodal access as well.

The opportunities contained in the report are conceptual (a set of assumptions, concepts, values, and practices that constitutes a way of viewing reality)[2] and derived from responses contained in two surveys. The first was developed to identify the perceptions of LDD Directors and the second was aimed at local government executives. These conclusions do not take into account the wide-ranging political, environmental, financial, or construction difficulties related to those segments. Those issues would need to be dealt with in another, more extensive study. The project team would have liked to include the major "feeder" routes such as I-40 and I-75 in Tennessee, I-64 and I-66 in Virginia, the Pennsylvania Turnpike, and other connections to I-81. However, funding placed a limitation on the scope of this project.

A map of the I-81 Corridor, including the Appalachian region that is part of it, is shown in Figure 1. The red line represents the westward geographic limit of the Corridor in Appalachia. The blue line is the I-81 Interstate highway. The purple area defines the geographic region of the I-81 Corridor and the yellow area designates the Appalachian region.

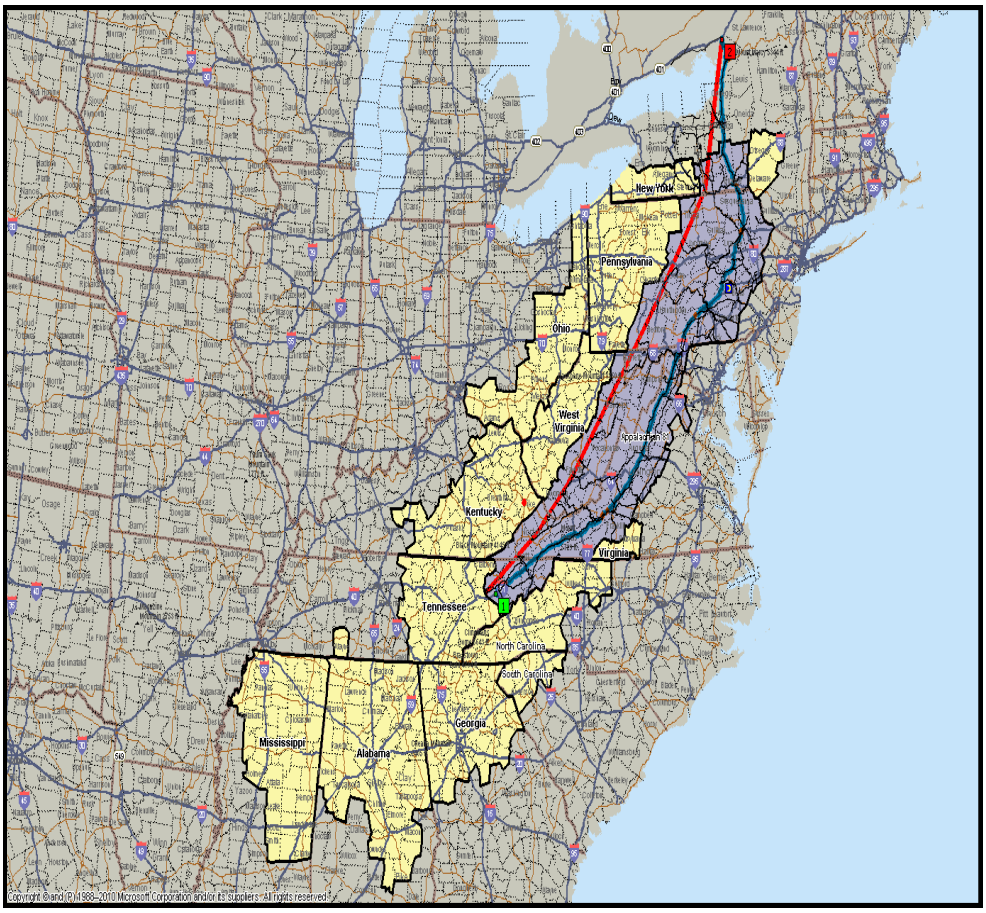


Figure 1. The I-81 Corridor

LITERATURE REVIEW

There are several excellent reports and studies that have examined opportunities for improving transportation networks and systems in Appalachia from strategic and policy viewpoints. In many cases, specific recommendations were based on traffic, freight movement, or other measures. Each of those reports has served as an important guide to this project. Special attention is directed to the publication *Status of the Appalachian Development Highway System*, September 30, 2011, which summarizes the extent of completion of the ADHS and benefits for Appalachia that are transportation-relevant.

The body of literature reporting on the social and economic factors of the Appalachian region is wide and deep. Several reports, presented as an annotated bibliography in Appendix J, directly impact this study and have been especially helpful. These include:

- Network Appalachia: Access to Global Opportunity, 2009;
- Economic Impact Study of Completing the Appalachian Development Highway System, June 2008;
- Meeting the Transportation Challenges of the 21st Century: Report #2: Intermodal Opportunities in the Appalachian Region, December 2004;
- Meeting the Transportation Challenges of the 21st Century: Report #3: Intermodal Case Studies, December 2004;
- Meeting the Transportation Challenges of the 21st Century: Report #4: Economic Benefits of Intermodal Efficiencies, December 2004; and
- The Appalachian Region in 2010: A Data Overview from the 2006-2010 American Community Survey, March 2012.[3]

The Appalachian economy, historically, has been largely based on the extraction of natural resources such as timber and coal; transportation of these goods has been subject to extensive study and evaluation. A survey of the body of literature regarding subjects such as transportation, the I-81 Corridor, and railroads within the Appalachian region yields studies in a number of directly and indirectly related areas. The ARC has commissioned many important transportation studies, and states along the I-81 corridor within Appalachia have authored long-range transportation planning studies that address the problems and future transportation needs of the area.

Any study of the effects transportation issues have on a region is primarily concerned with the movement of people and goods in, out, and through the area. Each of these functions is a primary component in creating and maintaining a climate for economic development and healthy communities. In the past, highways and rail were considered separately but, in today's freight movement environment, each mode is dealt with on an intermodal basis—where highways, rail lines, intermodal yards, and shipping are combined to create the most efficient transportation system possible.

There are studies looking at how the Appalachian region might benefit from intermodal transportation systems. Studies include analyses of government policy in administering and promoting intermodal transportation systems on state, local, and federal levels of government. Since intermodal transportation is currently considered important to the future of freight shipments, the I-81 Corridor plays a large part in the development and utilization of an intermodal network. This makes for a thorough understanding and analysis of intermodal transportation systems which is vital to creating a valid picture of the effects on the Appalachian region that I-81 is currently having and will have into the future.

An example of how events happening beyond the Appalachian area affect the region is presented in studies of the North American Free Trade Agreement (NAFTA) and how it affected the truck corridors throughout the United States.[4] In a similar fashion, completion of an enlarged Panama Canal, permitting larger container ships to pass from coast to coast, is likely to have a significant impact on east coast marine ports and, accordingly, Appalachia's domestic and international trade.[5]

The history of the Appalachian region notes that the area is populated by an independent people who have endured poverty, industrial upheaval, and isolation from the rest of the country. A number of studies look at the area's culture and the population's resistance to change. In many of those studies, how the transportation network changes the cultural, social, and economic environment is identified.[6]

APPROACH & METHODOLOGY

This project is grounded in a literature review, an email survey of 164 LDD directors and 203 local government administrators, a review of county websites within the Appalachian/I-81 geographic space, and visits or telephone interviews with 18 individuals at various locations within the region. The surveys were used to help define the Corridor and to get the perspective of the people who have a responsibility to achieve ARC goals within their respective jurisdictions. The interviews helped define the western boundary.

The first survey, (See Appendix A), was sent to LDD directors on a mailing list provided by the ARC (in this report, information used from that survey is labeled S-1 in relevant graphics). Responses were received from 47 individuals (28.66%). The second survey, gleaned from websites of the jurisdictions within Appalachia, was sent to a mailing list comprised of 206 local administrative officials. Responses were received from 66 individuals (32.09%). (Information and relevant graphics are labeled S-2.) A map showing the general location of the responders is contained in Appendix B. Specific information that could identify the responders has been removed to preserve confidentiality.

Following analysis of the survey responses, telephone interviews or face-to-face visits were made to six of the localities that appeared to be at the edge of the geographic corridor to confirm the western boundary. The selection criteria used to identify localities for this purpose are listed in Table 1.

The survey was implemented using the commercial software "Survey Monkey" to design, collect, and provide an overview of the responses. Each response was downloaded to Excel and subsequently uploaded to SPSS software for further analysis. Although the percentage of responses was adequate for a statistical survey, the responses were disappointing in that the project team was also looking for place-specific information. However, the project team believed the survey responses were sufficient in number and distribution to obtain a general overview of the transportation systems that are available to the respondents.

Table 1. Characteristics of Localities Selected for Boundary Interviews

Location	Distance from I-81 (miles) and Other Characteristics	Incomplete ADHS Components
Elmira, NY One interviewee indicated that I-81 has had an enormously positive impact on the Chemung County economy… the highway has been the principal infrastructural component of access to a massive array of lucrative new opportunities and markets in Appalachia.	55.1 miles. Elmira is close to the northern boundary of the ARC. ADHS corridor T has an unfinished connection to I-81. Treated as the starting point for the western boundary of the Corridor.	Corridor T between Elmira and I-81 at Binghamton along ADHS highway Rt. 17.
Johnstown, PA One of the Interviewees perceived that industry and personal travel predominantly moved to the I-81 Corridor around Altoona. He thought nearly all other traffic would move west toward Pittsburgh.	137.7 miles. Johnstown is a long distance from I-81 with a large section of ADHS corridor incomplete. An earlier survey pretest indicated an important role for Johnstown in the I-81 Corridor.	Corridor M between Altoona and Harrisburg.
Cumberland, MD Cumberland is a city in the far western, Appalachian portion of Maryland. It is located on Interstate 68 which provides direct access to I-81.	68.0 miles. Corridor E intersects with I-70. Located midway between Hagerstown and Maryland's western State Line.	No unfinished segment from Cumberland to Hagerstown. Two large unfinished segments on Corridor H including the interchange with I-81.
Beckley, WVA Strong proponent of traffic within the I-81 Corridor. Industry and personal mobility is to the east on I-64.	120.3 miles. Located on a north/south interstate route (I-77), and (I-64) into I-81 in Virginia.	None
Lebanon, VA Viewed the community as a definite component of the I-81 Corridor and indicated the Corridor would extend beyond Lebanon to St. Paul.	20.75 miles. Near the southern border of Virginia. Represented potential western border based on time and distance.	None
Chattanooga, TN VW plant is a major manufacturer in Chattanooga requiring large materials going into the plant and finished product coming out of the plant. Did not consider I-81 important to their industry because of adjacent suppliers. Did not consider traffic movements into the adjacent suppliers.	112.5 miles. One of several major Southern feeder routes to I-81 Corridor north of Knoxville. This is the largest city in Tennessee at the nominal end of I-81.	None

Generally, most respondents have more than one mode of transportation available. For example, Figure 2 shows that, in addition to highways, 93.5% of the respondents have access to freight rail, and 78.3% have access to aviation. Although access to I-81 is not significant for bikes – within the districts that responded – 30.9% reported bike commuting and 75.1% reported recreational biking.

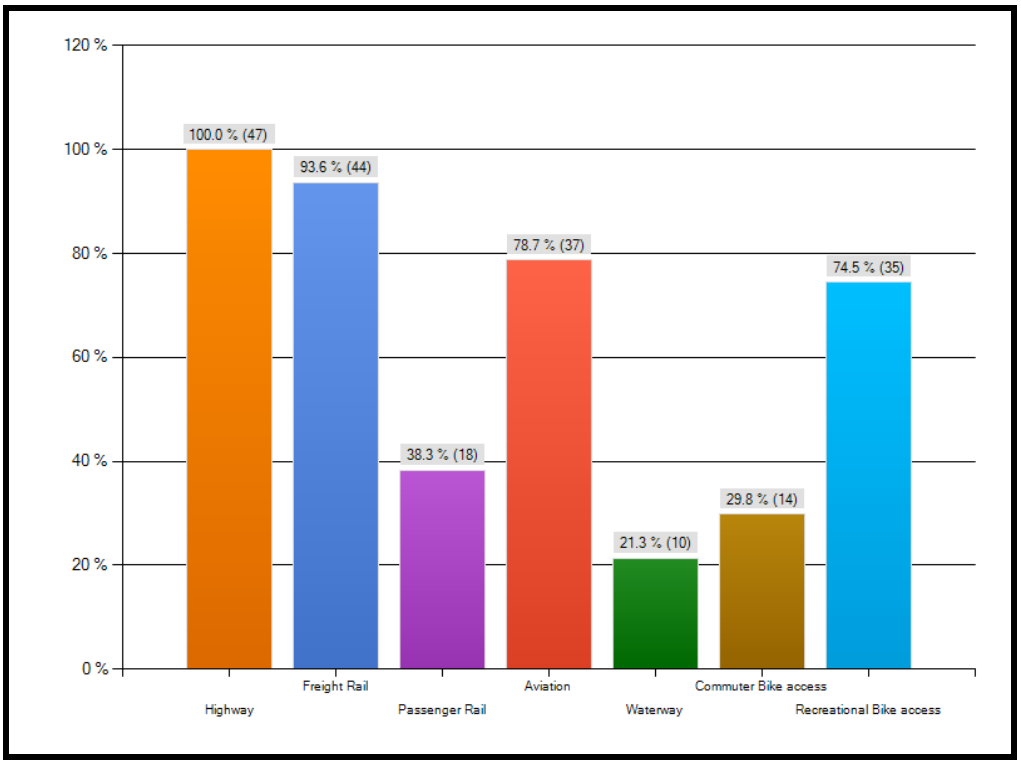


Figure 2. Available Transportation Systems (S-1)

ARC has developed a superb network of Interstate highways in the ADHS which connect with other federally funded Interstates. Virtually all of Appalachia currently has reasonably good access to an Interstate highway.

DEFINING THE I-81 CORRIDOR

The first task for the project team was to identify where to place the geographic boundaries of the I-81 Corridor, and then define the geographic space of Appalachia that is part of the I-81 Corridor.

Although corridor studies are becoming increasingly popular in long-range transportation planning, there are a variety of approaches to defining one. Some of the suggestions found in literature and expressed by state planners are to base the definition of a transportation corridor on the actual facility (highway or rail line) or include a buffer zone for a specified distance from the facility. Other definitions have crept into popular and sometimes diverse uses. For example, the Northeast Corridor refers in some cases to the Amtrak rail line and in other cases it is used to refer to part of or the entire Northeast Megalopolis from Washington into New England.

The approaches explored for this study are described below.

- In Wikipedia, the free encyclopedia, the definition of a transportation corridor is “a (generally linear) tract of land in which at least one main line for transport, be it

road, rail or canal, has been built."[7] In this case the corridor would be defined as the roadway and include all the right-of-way used for the facility.

- Federal Highway Administration (FHWA) guidelines for a federally required transportation corridor study or major investment study require a regional process. It includes the facility and areas of environmental concerns and involves representatives of each transportation agency with interest in the investment as well as a broad range of other stakeholders.[8]

- In 1996, a graduate student in the Virginia Tech Civil Engineering program, working under the direction of one of the authors of this report, researched the definition of a transportation corridor and wrote a Master's thesis that addressed the I-81 Corridor definition directly.[9] The author found four principal genres of boundaries: physical, geometric, anthropogeographic, and complex. Physical boundaries were those fixed by natural geographic features such as a river; geometric boundaries are those defined by fixed shapes—e.g., a 5-mile buffer zone; anthropogeographic boundaries are those defined by human interests and needs; and complex boundaries used a combination of all of the genres.

  The thesis looked at another approach. In order to define the I-81 Corridor, the student identified it on its "influence to attract highway trips." The resulting corridor he identified captured 85% of automobile trips and 78% of truck trips with an origin or destination within the defined corridor boundary. Figure 3 shows the extensive corridor identified in the thesis.

For the purposes of this project, the definition used by the project team was based on the assumption that the western boundary was the point at which freight and passenger traffic tended to travel east to I-81 and be somewhat dependent on the facility for some purpose in the perceptions of the survey respondents. In the defined corridor, LDD and local government officials indicated in their survey responses that accessibility was generally good, and there was a relatively high interaction with and dependence on I-81.

http://scholar.lib.vt.edu/theses/available/etd-02162010-020338/

Figure 3. I-81 Corridor Using 'Influence to Attract Highway Trips'

The western outside edge of the corridor was fixed after analysis of accessibility and dependence and conversations with 18 individuals in the six locations shown in Table 1. Freight and passenger traffic that tended to move west was considered to be outside the corridor. Traffic tendencies were sought in the surveys as the "perceptions" of expert and knowledgeable survey participants. Perceptions were used as a surrogate measure because they are understood to be largely a collection of observations of facts, and awareness of issues.

The eastern boundary was considered to be problematic because of the availability of easy access to the I-95 corridor. Given that I-81 is frequently used as a bypass to I-95, complete separation of the corridors may not be necessary; however, the project team decided to include a one-county-deep buffer zone. The eastern boundary was set by the project team's judgment and is just as "fuzzy" as the western boundary.

The definition of a corridor can also be measured on traffic and mobility measurements:

- Traffic-based measurements evaluate motor vehicle movement (vehicle trips, traffic speed, and roadway level of service).
- Mobility-based measurements evaluate person and freight movement (such as person-miles, door-to-door traffic times, and ton-miles).

- Accessibility-based measurements evaluate the ability of people and businesses to reach desired goods, services, and activities (such as person-trips and generalized travel costs).

For purposes of this report, distance from I-81 and the time required to drive to the nearest interchange were used as surrogates for accessibility-based measurements.

Using Distance and Time to Define the Corridor

The project team was interested to see how similar the corridor geography would be if it was based solely on the distance between a community's location and the nearest interchange. Distance from a corridor's interchange was a question asked of local government executives.

Figure 4 presents an interesting picture of how local government respondents who identified the distance from their community to an I-81 interchange answered the accessibility question. Those who responded that access was highly accessible generally had short distances and little travel times to I-81, as expected. As seen in Figure 4, however, and in the discussion of accessibility which follows, respondent understanding of the word "accessibility" may also be dependent on the nature of the travel (unimpeded or congested) or the purpose of travel (commercial requirements or nearest travel point to desired destination) or the availability of another Interstate interchange. Given that most of the respondents felt that I-81 was accessible, in some cases notwithstanding the distance from the corridor, time or distance may be one criterion to be used but is not exclusive without a deeper understanding of the reasons for travel to the corridor.

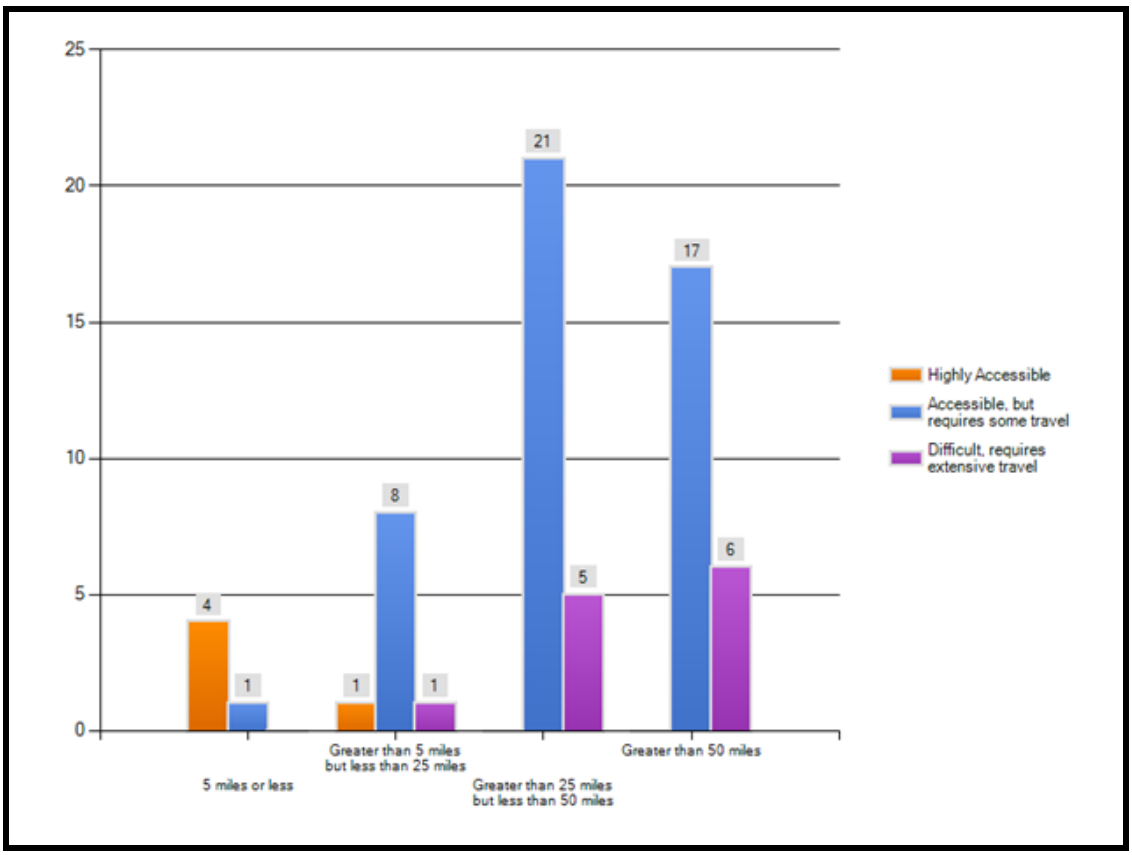


Figure 4. Rating of Accessibility by Distance from I-81 (S-2)

SURVEY DISCUSSION

Analysis of the two surveys and interpreting the perceptions of the respondents led to four primary discussion themes. The first theme deals with the **Accessibility** to I-81 from communities within Appalachia. Accessibility is posited as the most important point in defining the geography of a transportation corridor. Building further off the notion of accessibility is to determine how dependent industries are on the facility for their commercial uses. To some degree the extent of dependency on the facility for personal mobility should be considered, although access to an Interstate is more than likely to be for personal convenience. The third theme digs even a bit deeper to ask how the respondents viewed the **adequacy of the current systems and** how they perceive the **need for future improvements** to serve industry and personal mobility. Finally, the theme becomes related to the perceptions of community leaders to the nature of the obstacles to necessary improvements and the extent to which they believe their opinions count.

Accessibility

The first theme addressed in the two surveys was to determine the perception of accessibility to I-81 from Appalachian communities. For this purpose, survey questions

related to location, access to other Interstates, and utilization of I-81 were included. In planning the survey, the team thought that the word “accessibility” would be rated “highly” if their community was located close to I-81. On the other hand, access to the corridor would be rated “difficult” by the respondents if travel to the nearest interchange was more distant than 25+/- miles or took more than 20 minutes. During analysis of the survey responses, the team looked for a self-evident break in the data; however, 84.7% of S-1 and 80.3% of S-2 respondents indicated that I-81 was “highly accessible” or “accessible with some travel” regardless of distance or travel time.

Some respondents had more than 100 miles to travel for access to I-81, yet rated it as “accessible with some travel.” The project team believes these responses were probably influenced by the nature of travel (such as personal or commercial) as much as distance or time and whether an alternative Interstate was closer than I-81. For example, if a respondent traveled the entire distance on Interstate-class highways or if he/she were headed to a marine port or intermodal site, access could be viewed as “accessible with some travel” even though the Interstate was many miles distant. For purposes of this report respondents who gave access the highest rating were as far away as 138.5 miles (shown as “Highly”) and others who rated access at the second highest level (shown as “Requires travel”) had distances as much as 294.7 miles distant Table 2. Few respondents reported access “difficult”.

Table 2. Examples of Access Rating by Travel Time and Distance for Respondents 25+ Miles Distant (Identifiers Removed to Preserve Confidentiality)

State	Accessibility Rating	Distance (miles)	Travel Time
West Virginia	Requires travel	38.9	41min
Tennessee	**Highly**	57	54min
Virginia	Requires travel	48.9	57min
Maryland	Requires travel	62.7	59min
Virginia	Requires travel	63	1hr 13min
Virginia	Requires travel	124.9	2hr
New York	**Highly**	138.5	2hr 2min
New York	Requires travel	150.3	2hr 17min
West Virginia	Requires travel	184.9	2hr 46min
Pennsylvania	Requires travel	176.3	3hr 3min
West Virginia	Requires travel	294.7	4hr 16min

A deeper analysis for accessibility was made by looking at the utilization of I-81 for the principal product of a region and then the next two industry products. In order to reduce the data to a manageable size, the dozens of commercial products were further classified into five categories which were used throughout the survey analysis. The five categories are:

- **Natural Resources** (this category includes items such as mining and hydroelectric power generation).
- **Agriculture** (this category includes anything involving growing, raising crops, and feeding livestock until brought to market).

- **Manufacturing** (this category includes any assembly process and such items as chemical plants.
- While **Customer Service and Tourism** can be considered related industries, it was determined they needed to be separated into two different classifications. Industries that provide services primarily to the local population (such as retail sales and vehicle repair) were classified as **Customer Services**. This was contrasted with **Tourism** industries that provide services to non-permanent residents and tourists (such as hotels, vacation resorts, and any facilities that would be a point-of-interest destination to a tourist).

The perceptions of accessibility for each of the three categories of industries differed in how the industry categories were described. LDD directors ranked natural resources as the number one industry in their surveys. Manufacturing and tourism were ranked high as well. Local executives ranked agriculture as the number one industry. Despite the differences in the description of the industries, Figure 5 clearly shows that nearly all industries have an interaction with I-81. For the industry categories, I-81 is used frequently to ship products for domestic or international trade. Local service industries–including retail–have little need for the interstate corridors. The mining industry ships mostly by rail; that industry category uses the I-81 corridor less frequently.

Dependence

The second theme that surfaced from the two surveys is the extent to which industries and individuals depend on having the I-81 corridor available. To determine dependence, two related questions were included in the surveys. The first question asked respondents to describe how dependent industries were on the existing transportation infrastructure—regardless of mode. The second question asked if the industries used I-81 specifically.

The surveys found that virtually all respondents indicated that a majority of industries within the designated corridor (and some respondents outside of the corridor) were dependent in some way on I-81. Local customer service industries were the only industry category that did not rely predominantly on corridor travel. And, while mining industries ship mostly by rail, these responses indicate that the mining industry is dependent on having I-81 available in their communities nearly 50% of the time.

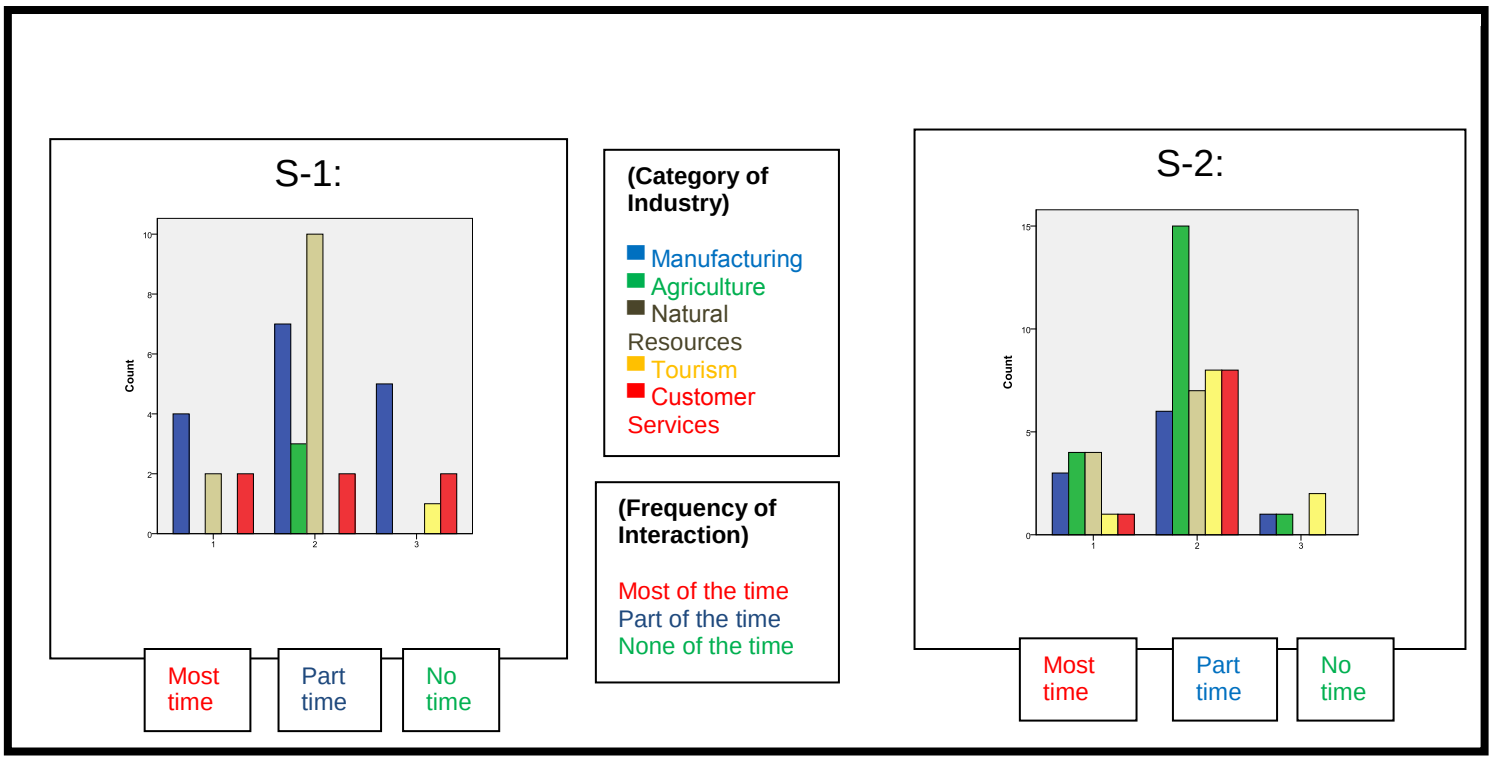


Figure 5. S-1 & S-2 Interaction (use) of I-81 by the Top Category of Industry

An additional measure of dependence is the extent of domestic and international trade into or out of Appalachia. Figure 6 below shows trade from Appalachia to U.S. and international destinations by region of the world. A reasonable assumption is that trade within the North American Continent is via the I-81 highway and trade to international destinations is into or out of marine ports using highways, rail, or intermodal transfer yards. As reported, Appalachia has substantial trade with international communities. With the opening of the expanded Panama Canal in 2014, trade may increase substantially. The figure only includes the three industries with tangible products.

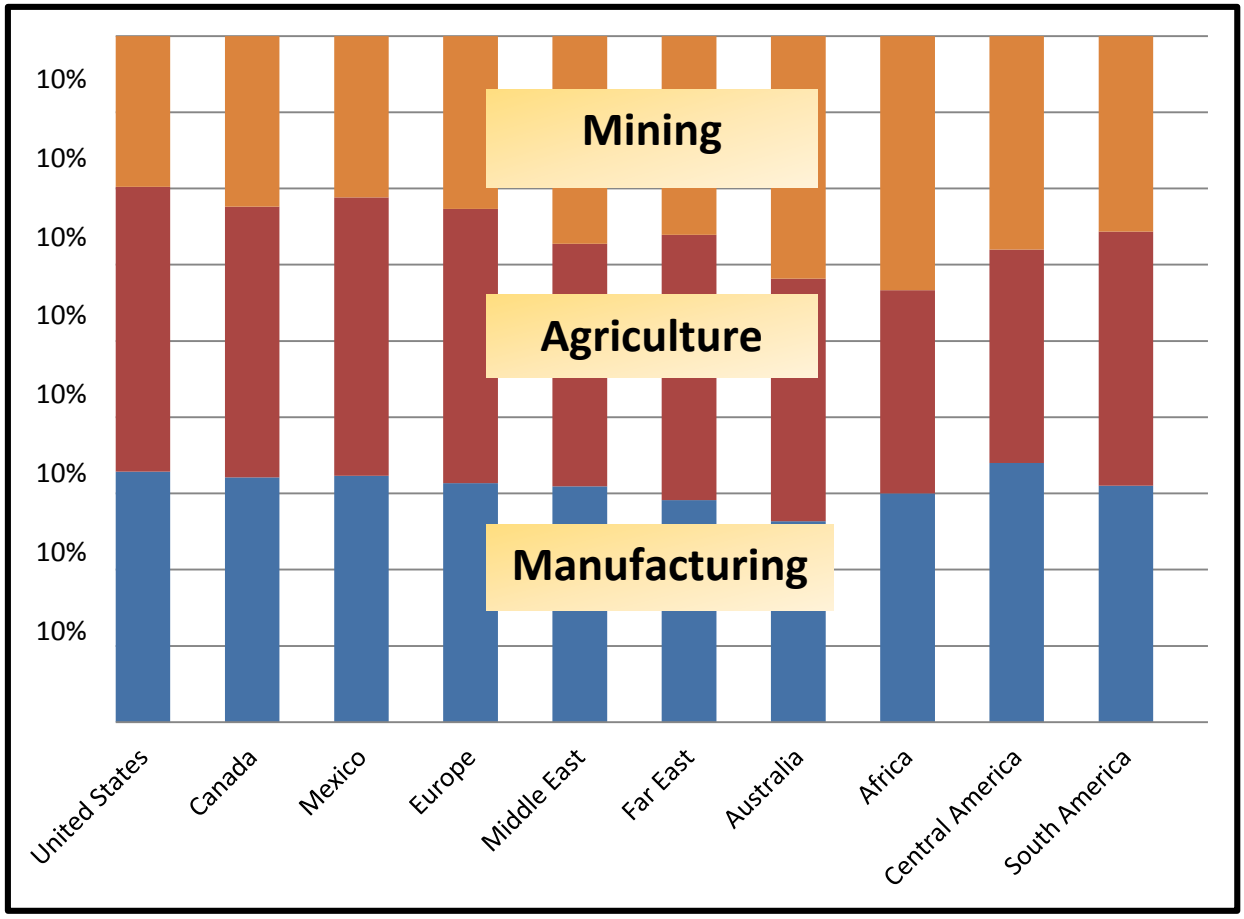


Figure 6. Industries' Import/Export by Areas of the World and by Volume

Adequacy and Need for Improvements

A third series of questions was intended to assess the adequacy of I-81 to handle current transportation needs. Follow-up questions asked whether respondents perceived a need for future improvements and, if so, to identify the type of improvements by mode and by purpose. Questions relating to need included the kinds of transportation system improvements that were currently underway in each region, if any; whether plans for improvement were available and funded; and the factors that generally influence transportation development. In all cases, the current highway and freight rail systems were perceived as close to meeting overall needs for personal mobility. However, in most cases, the systems are not felt to meet the current needs of industry. When looking to the future, nearly all survey respondents felt that the transportation systems would need improvements to meet industry needs 20 years in the future (Figure 7).

For purposes of this report, only responses from Survey 1 have been included for illustration since respondents for Survey 2 are likely to be heavily involved in the planning, review, and approval processes related to transportation improvement. The

data for local governments' perspectives on those issues, however, are available in Appendix A.

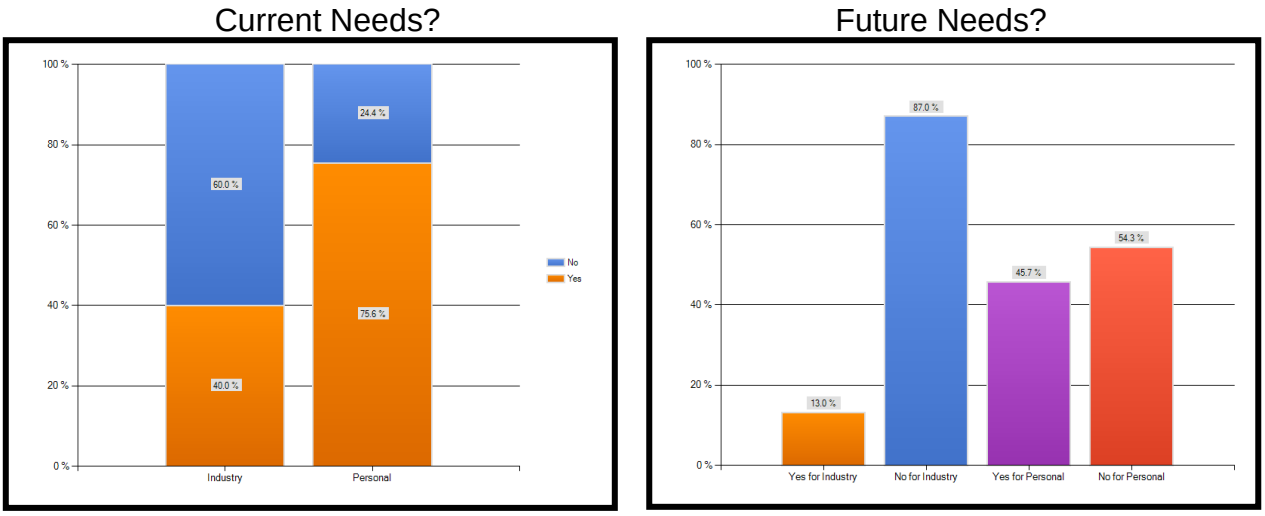


Figure 7. Do Transportation Systems Meet: (S-1)

In follow-up questions, survey respondents were asked if they were aware of plans to address transportation system needs in their area within the next 20 years, whether funding was available, and the modal needs. As shown in Figure 8, a surprising number of respondents know plans are available but most of the projects are without funding.

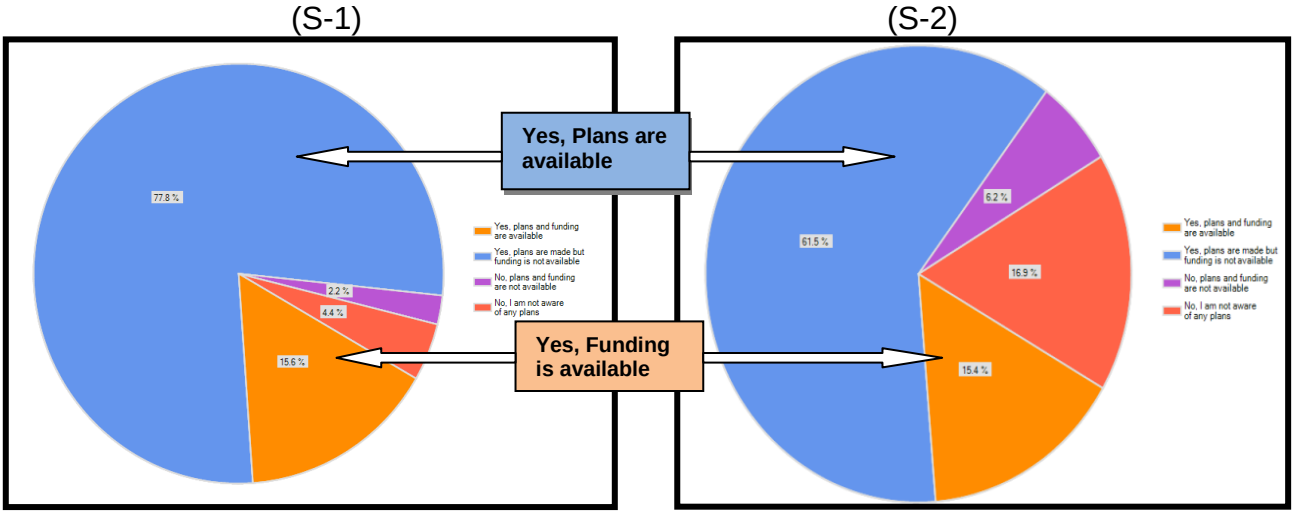


Figure 8. Availability of Plans and Funding

Respondents to Survey 1 and Survey 2 both agree that some smaller number of projects is available with funding. Local government officials tend to understand the extent of future construction plans and their responses to this survey show slightly fewer

project plans available. The difference is probably due to understanding of the stages of plan completion.

Survey respondents were asked to identify what transportation systems needed future improvements. Figure 9 shows that most respondents felt highway improvements would be needed in 20 years. Three quarters of the respondents felt freight rail improvements will be needed; a surprising 61% of respondents also perceived passenger rail will be needed.

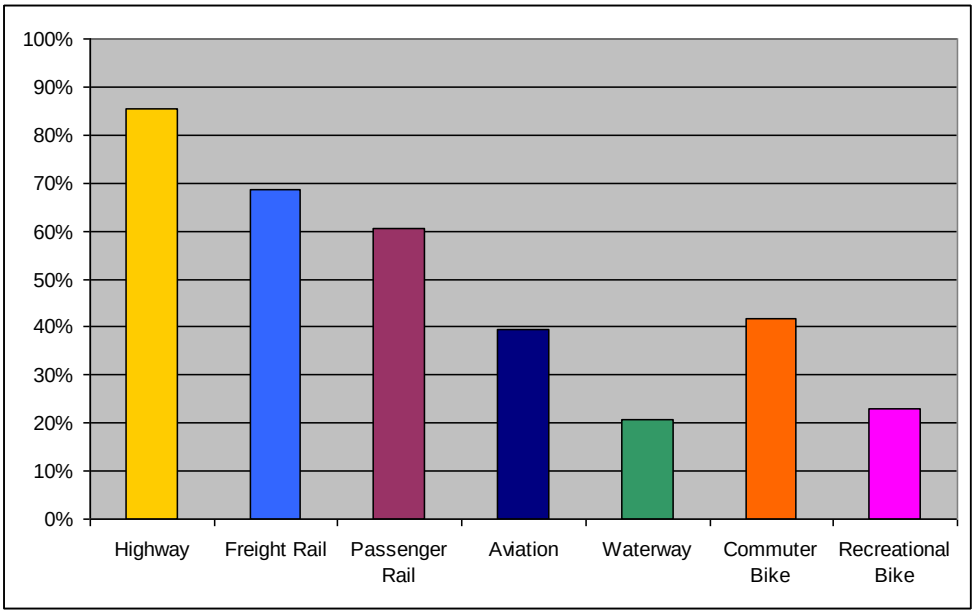


Figure 9. Transportation System Improvement Needed in 20 Years

Obstacles

A fourth theme the project team was interested in was to identify the obstacles that local respondents perceived when seeking transportation improvements. A secondary objective was to determine if they felt they had access to transportation decision makers in a meaningful way.

Since the second survey was addressed to local government officials who are usually participants in the decision process, Figure 10 illustrates the responses from Survey 1 only. Respondents were asked to characterize the level of communication with other government and private entities; and with regard to those same entities, the extent to which the respondents' opinions were meaningful in the policy and decision-making processes.

Among the top issues to rise to the surface were financing, environmental, local resistance, local regulations, and geographical considerations. Surprisingly, contrary to the expectations of the project team, the federal and state regulations were not considered top concerns.

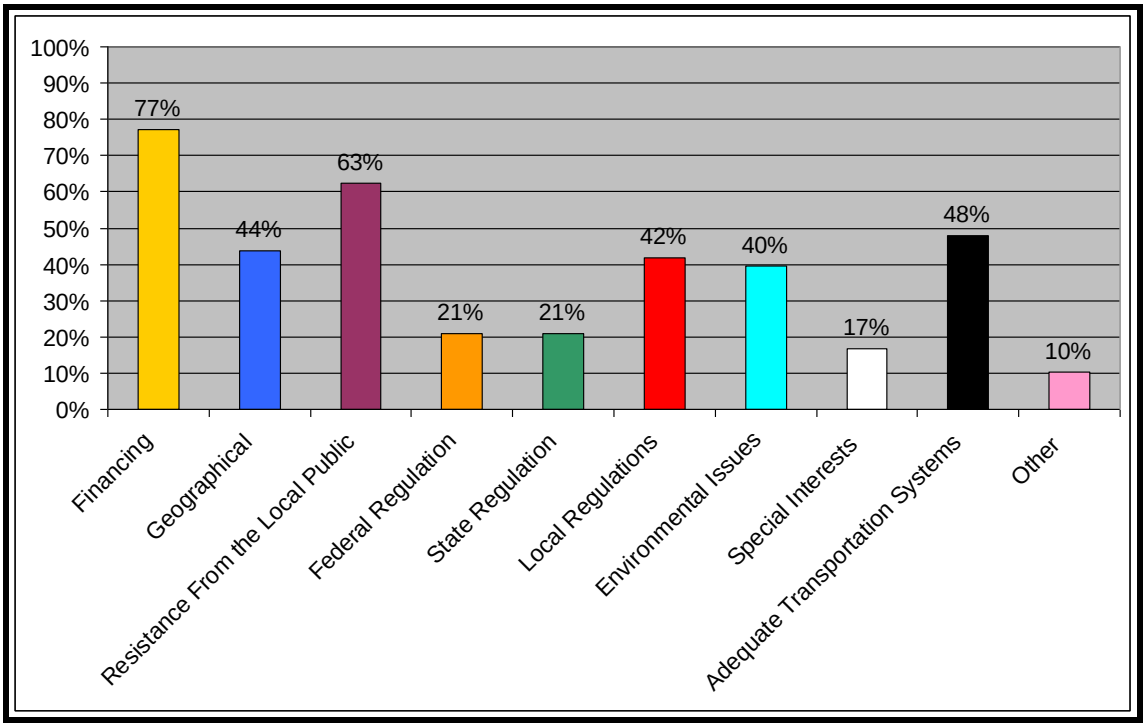


Figure 10. Ranking of Obstacles to Transportation Improvements

A final question was asked to determine how LDD directors perceived the way their opinions were included in the actual policy decision making process (Figure 11).

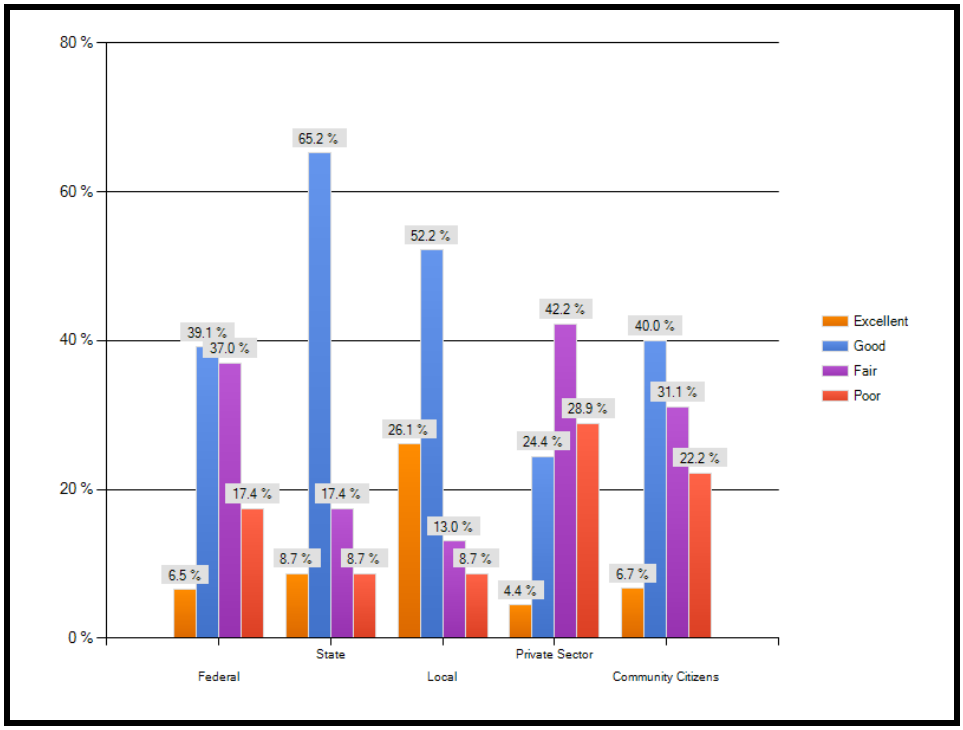


Figure 11. Extent of Inclusion in Policy and Decision Making Processes, S-1 Only

CONCEPTUAL AND STRATEGIC VISION OPPORTUNITIES

Throughout this project, it was clear that the geography of the Appalachian region makes travel for industries and personal mobility highly dependent on highway usage for traffic into and out of Appalachia. The development of the ADHS and recent emphasis on new rail corridors and intermodal yards was a critical part of the congressional purpose as stated in the strategic partnership between states and the federal governments.

1. Increase job opportunities and per capita income in Appalachia to reach parity with the nation.
2. Strengthen the capacity of the people of Appalachia to compete in the global economy.
3. Develop and improve Appalachia's infrastructure to make the Region economically competitive.
4. Build the Appalachian Development Highway System to reduce Appalachia's isolation.[10]

In order to continue to achieve and sustain those purposes, there are conceptual and strategic opportunities in the further development and completion of the transportation systems and networks in each Appalachian territory that is clearly a part of the I-81 corridor.

Advocate a Safer and More Efficient I-81 Interstate Highway

First, with regard to the I-81 facility itself, greater attention and advocacy needs to be given to improve conditions for the continuing increase in truck freight the entire length of the highway. The four-lane facility in Virginia is increasingly inadequate and must be expanded. Congestion in key locations such as Harrisburg and Roanoke needs to be reduced. Ways must be found to improve truck and passenger car safety. Improved – and more aggressive – communication and cooperation in planning and better integration of roadway technology for incident management and traffic monitoring are clearly necessary. Advocacy for intermodal opportunities, added passenger rail capabilities, and more efficient freight movement options are the responsibility of each individual state and its partnership with the ARC. These have been among the founding principles of the I-81 Corridor Coalition and should continue to be priority concerns. Clearly, it is to everyone's advantage – Appalachian communities and industries, the states and federal government, and the economic wellbeing of the people of Appalachia – for neatly meshed transportation systems and the I-81 corridor.

Develop a Consolidated and Collaborative Maintenance Plan for the Corridor

The project team believes that the states, working with the cooperation of the ARC's LDD directors, should prepare a consolidated needs assessment for maintenance and re-construction projects and funding that will be necessary for the next 20 years. It is our understanding that this assignment may be beyond the transportation construction charge given to the ARC. Even so, it is an important next step and the LDD directors should be involved as knowledgeable sources of information on transportation system performance and condition.

Further Research on the Impact of the Expanded Panama Canal on Appalachia

The Appalachian region appears to have a unique opportunity for international commerce as a result of the expansion of the Panama Canal. Commerce into and out of east coast maritime ports will likely increase because of easier transit of shipping from coast to coast. State transportation agencies with the cooperation of the LDD directors should carefully monitor increases in both truck and rail freight at maritime ports that is going into and out of Appalachia as a result of an expanded Panama Canal. It is conceivable and probable that transportation demands and import/export traffic will increase.

Complete ADHS System Gaps

The ADHS was intended to provide better connections and access to most communities in Appalachia. That objective has been met; however, from a strategic perspective, existing gaps should be completed for optimal access to I-81. In order to do so, the following gaps should be given priority:

- **Corridor T** to complete I-81 to Elmira and Jamestown, New York, and Erie, Pennsylvania.
- **Corridor M** from Altoona to Harrisburg to connect central Pennsylvania to I-81.
- **Corridor Q** to complete system access from Pikeville, West Virginia to Roanoke, Virginia.
- **Corridors K and A**, to improve feeder routes from Chattanooga, Tennessee and Atlanta, Georgia.

Complete Corridor H.

- One of the most important gaps that should be completed is connecting Corridor H to I-81 to provide direct access to I-81 and the Virginia Inland Port. This would provide intermodal access for much of northern West Virginia and an east/west highway for Virginia to Cincinnati, Ohio; Indianapolis, Indiana; and Chicago, Illinois.

Advocate Intermodal Yards and Proposed Elliston, Virginia, Yard for Truck Freight

- LDD directors should review the adequacy and potential utilization of intermodal connections as part of their economic development responsibility. The ability to transfer freight between truck and rail is increasingly important for the economy of Appalachia. Although many intermodal opportunities exist, one important project that needs advocacy is completion of the already authorized and planned Elliston (Virginia) Intermodal yard as a transfer point for truck freight intended for export and import of Appalachian products from western and southwestern Virginia and southern West Virginia.

[1] Wikipedia, the free encyclopedia, http://en.wikipedia.org/wiki/Strategic_vision, October 3, 2012

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[3] Each report is available at http://www.arc.gov/

[4] NAFTA: Big Trucks, Big Questions, TED Case Studies, http://www1.american.edu/TED/TRUCK.HTM, October 30, 2012

[5] Panama Canal Expansion Impact on U.S. Economy, http://useconomy.about.com/od/tradepolicy/p/Panama-Canal-Expansion-Impact-On-U-S-Economy.htm. October 30, 2012

[6] Biggers, Jeff, The United States of Appalachia, npr books, 2006

[7] Wikipedia, the free encyclopedia, http://en.wikipedia.org/wiki/Transport_corridor, October 30, 2012

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