

# Staff Report:

## Additional Information Concerning Passenger Rail Potential in RVAMPO Area



Final

Fiscal Year 2008

Roanoke Valley Area

Metropolitan Planning Organization



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This report was prepared by the Roanoke Valley-Alleghany Regional Commission (RVARC), which is the lead staff agency for the Roanoke Valley Area Metropolitan Planning Organization (MPO) in cooperation with the U.S. Department of Transportation (USDOT), the Federal Highway Administration (FHWA), Federal Transit Administration (FTA), Virginia Department of Rail and Public Transportation (VDRPT), and the Virginia Department of Transportation (VDOT). The contents of this report reflect the views of the staff of the Roanoke Valley Metropolitan Planning Organization (MPO). The MPO staff is responsible for the facts and accuracy of the data presented herein. The contents do not necessarily reflect the official views or policies of the FHWA, FTA, VDRPT, VDOT, or RVARC. This report does not constitute a standard, specification, or regulation. FHWA, FTA, VDRPT, or VDOT acceptance of this report as evidence of fulfillment of the objectives of this planning study does not constitute endorsement/approval of the need for any recommended improvements nor does it constitute approval of their location and design or a commitment to fund any such improvements. Additional project level environmental impact assessments and/or studies of alternatives may be necessary.

## Chapter 1 – Background and Report Organization

### Purpose

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The purpose of this report is to provide regionally relevant information to Roanoke Valley Area Metropolitan Planning Organization (RVAMPO) local governments for informational and decision making purposes. The purpose is not to redo or replace any of the various state level passenger rail studies that have been completed between 1996 and 2008.

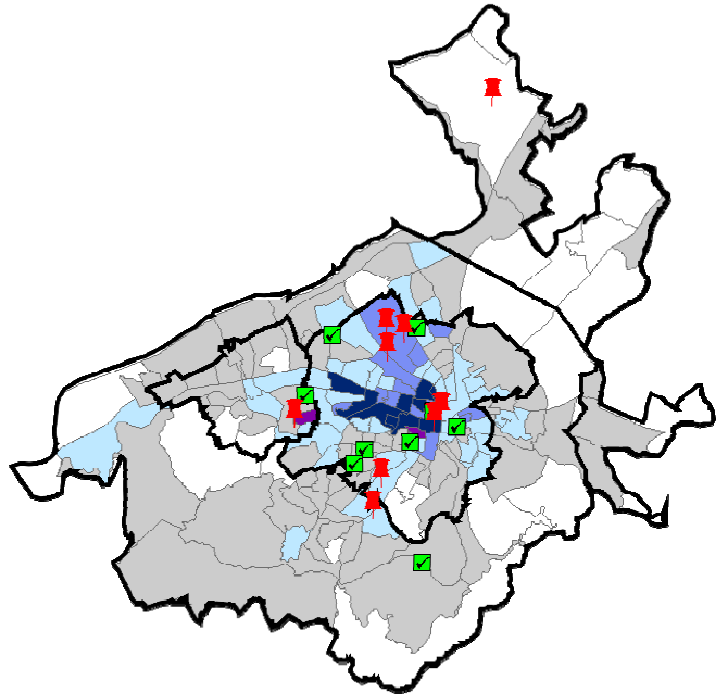
### Background

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The RVAMPO is the federally designated Metropolitan Planning Organization (MPO) for the City of Roanoke, City of Salem, Town of Vinton and urbanized portions of the Counties of Bedford, Botetourt and Roanoke. The RVAMPO is responsible for the regional Constrained Long-Range Transportation Plan (CLRTP) and the regional Transportation Improvement Program (TIP). As a part of its CLRTP and TIP planning duties, the RVAMPO has developed a multi faceted public participation and stakeholder consultation process. Recently this participation/consultation process has relied on several major initiatives:

- Electronic Touch Screen Kiosk
- Focus Groups with established neighborhood organizations and civic leagues
- FY2007 MPO Policy Board Survey

Each of these initiatives has indicated a broad based interest in the concept of intercity passenger rail serving the Roanoke market. This broad based interest lead the RVAMPO to include this study in its Fiscal Year (FY) 2008 Unified Planning Work Program (UPWP).



**Kiosk and Focus Group Locations with reference to Environmental Justice (EJ) Index Scores**

Touch Screen Kiosk Location indicated with Red Push Pin  
Focus Group location indicated with Green Check Box

#### *Electronic Touch Screen Kiosk:*

The touch screen kiosk is a mobile computerized survey instrument. Participants select answers to pre-loaded questions by touching the screen directly with their finger. The touch screen kiosk has been deployed at:

- The Roanoke Higher Education Center
- The Virginia Employment Commission’s Workforce One Center at Valley View
- The Roanoke Regional Airport
- Virginia Western Community College
- Department of Motor Vehicles (DMV) – Crossroads Mall Branch
- Tanglewood Mall
- Arnold R. Burton Career and Technical Center – Roanoke County Schools
- The Franklin Center in Rocky Mount, Virginia
- Various One-day events



**Touch Screen Kiosk**

Question number 16 on the touch screen kiosk asks: **Do you agree with the following statement? “The Roanoke Valley should plan and develop passenger rail service to Richmond/ Washington D.C.”** During a time period spanning from July 2006 to May 2008 this question has received 2175 total responses. From the total 1020 (47%) responses reported “Strongly Agree,” 588 (27%) reported “Agree,” 303 (14%) reported “Neither Agree nor Disagree,” and a combined 264 (12%) reported either “Disagree or Strongly Disagree.”

***Focus Groups:***

RVAMPO staff conducts focus groups with established neighborhood associations and civic leagues within the RVAMPO service area. Focus groups are can be thought of as a guided conversation designed to get qualitative research by allowing participants to explore lines of thought in their responses. RVAMPO staff use a set of five questions as a backbone to guide the focus group through its discussion:

- Do you feel your neighborhood is well connected to the regional transportation system?
- Are there any groups of people (e.g. teenagers, elderly, low-income) in your neighborhood that could benefit from additional or expanded transportation options? What forms of transportation do you feel would be effective?
- What features work to enhance transportation safety in your neighborhood? How do you feel transportation safety could be improved?
- What role do you see technology playing in transportation? In your neighborhood?
- Over the next twenty years, how can transportation in your neighborhood and the region be improved?

Since focus groups are open ended these five questions usually take at least thirty minutes to complete. None of these questions directly reference or even guide respondents towards the subject of intercity passenger rail. Nonetheless, intercity passenger rail plays a prominent role in the discussion in around 80% of focus groups.

### ***RVAMPO Policy Board Survey:***

In FY2007 RVAMPO staff polled the RVAMPO Policy Board as a component of the RVAMPO bylaws update process proceeding in that fiscal year. The Policy Board survey included a section asking which areas RVAMPO staff should concentrate their efforts on in the coming years, 71% of MPO members responded to the survey. In the question pertaining to which functions or activities of the MPO are important in the future, the top responses were as follows:

- |                                                |                     |
|------------------------------------------------|---------------------|
| • <b>Rail Issues</b>                           | <b>10 Responses</b> |
| • Transportation/Economic Development Linkages | 9 Responses         |
| • Transportation/Lane-use Linkages             | 9 Responses         |
| • Greenway Planning                            | 8 Responses         |

In preparing the FY2008 MPO Work Program, staff was faced with a clear preference from the MPO Policy Board, focus group participants and kiosk respondents to devote effort to a passenger rail planning study. The difficult task lies in determining what new and unique contribution RVAMPO staff can make to the public discussion of reestablishing passenger rail in the Roanoke Valley. Organization of the remainder of this report is an attempt to either summarize previously available information specifically with respect to the Roanoke Valley, instead of a statewide context and/or generate new information that was previously unavailable in the many statewide passenger rail studies.

### **Organization of Report:**

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The remainder of this report will be organized in four additional chapters:

- Chapter 2: Characteristics of Hypothetical Roanoke to Washington D.C. Passenger Rail Service
- Chapter 3: Business and Organizational Travel Survey Results
- Chapter 4: Station and Site Impacts
- Chapter 5: Recommendations and Next Steps

Chapter 2 uses previous statewide studies concerning the TransDominion Express passenger rail service concept to construct a specific profile of a hypothetical Roanoke to Washington D.C. passenger rail service. Chapter 2 explores the concepts of “Market Drivers for Ridership,” “Service Characteristics,” and possible “Environmental Impacts” of a Roanoke to Washington D.C. rail service.

Chapter 3 describes a business and non-profit organization travel that was administered by RVAMPO staff. The central premise of Chapter 3 is that organizational policy such as, what type of business travel is reimbursed by organizations, plays a key role in determining the character of potential business and organizational channel. Passenger rail service could serve an organizational travel niche that could have been under analyzed by previous studies.

Chapter 4 investigates possible site development impacts at least partially attributable to a reestablished Roanoke to Washington D.C. passenger rail service.

Chapter 5 provides a summary of recent transportation funding trends and recommendations concerning possible local or private funding sources. Chapter 5 also introduces some partial or hybrid solutions that anticipate results of the Statewide Rail Plan due by the end of Summer 2008.

## **Chapter 2 – Hypothetical Roanoke to Washington D.C Passenger Rail Service Characteristics**

### **Background**

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Starting in 1996 Virginia began a series of studies considering the cost and ridership potential for passenger rail service crossing the Commonwealth. The proposed TransDominion Express (TDX) line would run from Bristol to Washington D.C. and would include stops in Roanoke, Lynchburg, Richmond, Charlottesville, and other smaller localities in between.

In each of the five studies that have been completed since its proposal, operation costs and ridership numbers have varied significantly. For example, the initial 1996 study undertaken by the Virginia Department of Rail and Public Transportation projected an annual ridership of over half a million, while a 2000 study by Amtrak projected only 26,000. Ridership in particular has been a difficult number to pin down, and experience with similar projects across the country have revealed whereas forecasting improvements in existing systems is relatively easy, determining potential ridership for new systems can be extraordinarily difficult. In 2007, an *Update on Status of Proposed TransDominion Express (TDX) Passenger Rail Service* was completed that summarized the conclusions of the previous five reports and selected those results that seemed the most reasonable in light of the most current data available at the time and the experience of similar systems across the country.

The findings of the *Update* put the cost of TDX infrastructure improvements at \$180.4 million in current dollars, annual operating expenses at \$18 million, and ridership numbers topping out at 58,000 a year (Miller vi). Revenues generated from this level of ridership are projected to be \$1.8 million.

As part of the 2008 Roanoke Valley Area Metropolitan Planning Organization (RVAMPO) work program, staff were directed to undertake a study narrowing the scope of the TDX proposal to service which terminated in Roanoke as opposed to Bristol, but retained all other stops and ridership assumptions as determined in previous studies. This report reflects the results of that study and largely utilizes the conclusions made in the 2007 *Update*, modified somewhat by current data as well as an emphasis on the business traveler segment of the ridership market. It also assumes that the removal of the Roanoke to Bristol line will not have a measurable effect on ridership numbers. This seems consistent with previous studies, which concentrate on Roanoke to DC trips and do not take into account Roanoke to Bristol trips as part of the total ridership forecast.

### **Market Drivers for Ridership**

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Clearly, when discussing any kind of mass transit service, the question of ridership comes and the ability to forecast ridership is of utmost importance. The implementation and operation of an intercity passenger rail service is an expensive proposition, and high ridership is the main measure of success, particularly when that ridership translates to relatively low level of public

subsidies for operation costs. Previous TDX ridership forecasts have relied heavily on level of service assumptions – trip time, on-time service, and amenities – as the primary decision drivers for travelers, along with historical trends and existing census data to formulate baseline numbers. It is not the intent of this report to challenge the validity of these forecasts; indeed, it will assume them to be accurate for purposes of capturing the incremental changes between full TDX service and a shorter Roanoke to Washington D.C. route. Nonetheless, it is important to recognize that historical trends and level-of-service forecasts do not incorporate significant changes in market conditions over the years since DRPT’s initial study, nor do they take into account Roanoke-specific market conditions that could alter basic assumptions about demand.

When discussing the consumer decision making process, it’s helpful to distinguish between low-involvement and high-involvement products. Low involvement products are those which offer relatively little risk, minor differentiation between brands or quality, and invoke little to no brand loyalty (Silberger 11). High-involvement products indicate more risk and more planning required before the purchase, could be more expensive, but also invoke greater brand loyalty and often more emotional satisfaction (Silberger 9). The illustration Silberger uses in *The 10-Day MBA* is that of shoes. Once a purely practical, low-involvement good, aggressive marketing, endorsement by celebrity athletes, and innovative design changes have turned many brands of shoe into high-cost, high-involvement items that inspire rabid loyalty and even, incredibly, violence. A similar arc can be seen in the development of the automobile as a consumer good, which has seen it transform from a fairly practical machine into an increasingly high-tech, high-involvement device. Indeed, the transformation has come so far that the new CEO of Chrysler recently said “I think a vehicle today has to be your most favorite room under your roof...It’s incidental that it gets you from Point A to B, right?” (Maynard 2007).

The service levels noted above reflect relatively low-involvement decisions in terms of a mode shift to passenger rail: trip times between rail and automobile are generally perceived as comparable, on-time arrival in a personal vehicle is generally assumed, and familiarity with one’s own vehicle generally trump amenities of other modes, just to name a few. However, since its 1996 introduction, and even since the April 2007 *Update*, there have been demographic, environmental, and economic trends that increasingly support the implementation of passenger rail service across the state and have the potential to make the decision to use passenger rail a high-involvement one.

Primary among these trends is the skyrocketing costs of fuel. In 1996, oil was running just over \$20 a barrel, or \$28 in 2007 dollars adjusted for inflation. In April of 2007, oil had increased to approximately \$70 a barrel, and on January 2008 oil reached an all-time high of \$100 a barrel (“Oil Price Increases Since 2003” 2008). In current dollars, this represents an increase of over 300%. In terms of fuel cost, this reflects an increase from roughly \$1.43 per gallon of gas at the end of 1996 to around \$3.00 a gallon by the end of 2007; in 1996, therefore, the average commuter would spend \$25 on fuel driving to Washington D.C. in 1996 versus \$54 in 2007. The drivers behind these price increases have been varied but are primarily linked to increases in demand, especially from growing economies like those in China and political instability in oil-producing markets (Shenk 2008). This global increase in demand shows no signs of slowing; indeed, China and India in particular are seeing rapid growth that will keep prices high “for the foreseeable future” (Esty 40). Further, even as gas prices have increased



over the last decade, not until December of 2007 did consumption in the U.S. fall (Hargreaves 2007). It is too early to tell if this drop reflects sustainable reductions in demand, a change in holiday spending habits, or fear of an economic downturn. Whatever the reasons, these trends show no signs of reversing soon, indicating that transportation costs for Virginia drivers will continue to grow at an increasing rate; this makes the relatively stable prices of passenger rail fare increasingly attractive.

Demographic changes, primarily reflected in an aging population, also suggest an audience for passenger rail service. Consistently rated among the top regions in the country to retire (Wood 2008), and with relatively small population growth and challenging drain of younger citizens to other regions, the Roanoke Valley will likely see an increasing demographic shift to a more elderly citizenry over the next decade. This presents transportation and mobility challenges within the Valley itself, but also indicates that increase public transportation options provide an opportunity to keep the Commonwealth's retirees linked to the whole of the state and increase its ability to market itself as a desirable destination for retirees.

Finally, concern about global climate change and U.S. energy independence continues to grow, prompting the need for a response and strategy on the part of public officials. The Commonwealth has made strides in addressing these concerns, beginning with the adoption of the Virginia Energy Plan in 2007. That plan establishes as one of its goals the reduction of energy growth in the Commonwealth 40% by 2017 (VDMME 2). The plan also notes that "[t]ransportation is the single largest energy using sector, accounting for approximately 43% of total energy use in the state" (VDMME 3). Providing the option of cross-state passenger rail, accompanied by aggressive marketing and promotion of the service, can be an important step both in meeting Virginia's these short-term energy goals as well as establishing the infrastructure for a long-term solution to increasing transportation energy demand. Concern about climate change has the greatest potential to make passenger rail a high-involvement consumer choice, particularly among business travelers and their employers who are increasingly under pressure from their customers to be environmentally-friendly. The beneficial environmental impact of switching trips from automobiles to passenger rail are discussed later in this report.

## **Service Specifics**

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### *Ridership*

As noted above, forecasting ridership for new passenger rail service can be notoriously difficult. The following ridership numbers, taken from the 2007 *Update*, follow a conservative forecast model; actual ridership could be much higher depending on service levels offered including travel time, on-time service, and customer service amenities such as electric outlets for laptop use, food service, and others. These numbers reflect a travel time of approximately 4.5 hours between Roanoke and Washington D.C. with two trains running round-trip per day (given travel time projections, it does not seem likely that removing the Bristol to Roanoke segment of the route – a trip time of approximately 6 hours round trip - would provide sufficient time savings to add an additional train each day). This trip time is roughly comparable with automobile travel time, and reflects a significant improvement over automobile trip time during peak congestion periods. It is worth noting that, though important, travel time is an unreliable

indicator of potential ridership. Miller relates that of systems similar to the proposed TDX service in terms of travel time and distance, those that have seen significant ridership increases have not always seen these increases coincide with improvements in trip time but rather improvements in on-board amenities and the quality of stations (Miller 10). This further indicates that passenger rail service has the potential to become a high-involvement decision by travelers as price pressures make automobile travel less attractive.

The Roanoke to Washington D.C. segment of TDX is predicted to bear 91% of total ridership (Miller 20), all stops inclusive, amounting to 51,483 annual trips between stations along this segment. Roanoke itself is projected to generate 5,538 trips (see Table 1, below, for a breakdown of the station-to-station trips), or 11% of total TDX ridership. The vast majority of the ridership – 37,072 annual trips - is projected to be generated by the Lynchburg, Charlottesville, and Alexandria stations (Miller 14).

Table 1. Total Predicted Trips from Roanoke

	To Lynchburg	To Charlottesville	To Alexandria	To Richmond
From Roanoke	1849	202	3446	41

Keep in mind that the original ridership forecasts did not take into account potential riders from outside the state. It is possible that a Bristol station would generate travel not only from Bristol itself, but from Washington D.C. travelers coming from Tennessee and surrounding states, linked through other passenger rail options.

*Infrastructure*

The total infrastructure cost for all rail and associated road improvements for the entire TDX proposal is projected at \$120 million in 2001 dollars. Of that, \$27.8 million was allotted just for the improvements from Bristol to Roanoke (Miller Email), reducing the infrastructure costs to \$92 million if that increment of the route was removed. Adjusting these costs at the rate of the most current inflation indices available to the 2007 Update would bring the original total cost to \$180.4 million and the new cost to \$139.8 million in 2007 dollars. This reflects an annual rate of inflation for highway and rail construction costs that has tended to outpace the overall national inflation rate.

*Operation*

Incremental operating costs are not broken down in the same way that incremental infrastructure improvements costs are; however, we can estimate that number by using a per-mile calculation for total operating costs and adjusting accordingly. The original operating costs were projected at \$14.5 million; adjusting for inflation rate of 3.5%, this brings the total operating costs to \$17.8 million in 2007 dollars, or an annual per-mile operating cost of approximately \$37,000. Removing the Bristol to Roanoke segment shortens TDX service by roughly 145 miles, resulting in a new annual operating cost of \$14.4 million in 2007 dollars.

## Environmental Impact

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In terms of greenhouse gas emissions, passenger rail has clear advantages over automobile travel. Assuming the use of standard diesel fuel, passenger rail emits .45 pounds of CO<sub>2</sub> per mile versus 1.10 pounds per mile of automobile travel. If alternative fuels such as biodiesel are used, additional improvement can be made. Based on the above ridership forecasts and trip distance between stations, moving these travelers from single-occupancy vehicles to passenger rail will result in a reduction of greenhouse gas emissions of 59%, or over 630,000 pounds a year, as shown in Table 2, below:

Table 2. CO<sub>2</sub> Emissions by mode

	L'burg	C'ville	Alexandria	Richmond	Total
Trips	1849	202	3446	41	5538
Miles	56	120	244	189	609
Total Vehicle Miles Traveled	103,544	24,240	840,824	7,749	976,357
Auto GHG (lbs CO <sub>2</sub> )	113,898	26,664	924,906	8,524	1,073,993
Rail GHG (lbs CO <sub>2</sub> )	46,595	10,908	378,371	3,487	439,361
Change	-67,304	-15,756	-546,536	-5,037	-634,632

Further, once service is implemented and market conditions work to increase ridership, greenhouse gas emissions will be reduced at a corresponding level.

It is possible, though unlikely, that implementation of passenger rail will have much impact on traffic volume and congestion along the I-81 corridor, as much of this is generated by trucks and represents trips being made through Virginia and not within Virginia. Therefore, incremental improvements in greenhouse gas emissions coming from improved traffic throughput are unlikely. Further, ground-level air quality issues such as ozone and fine particulate matter (PM 2.5) pollution are unlikely to be significantly affected; to the extent these pollutants are being generated from tailpipe emissions, this is happening either from vehicle trips made within the region, or, again, from truck travel along I-81 that will not be offset by TDX service. The environmental benefits from implementing passenger rail have general, rather than local, impacts.

## Chapter 2 - Conclusions

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Clearly, removing the Roanoke to Bristol leg of the proposed TDX service provides significant cost savings over the original plan without significantly cutting into ridership, though doing so does not provide additional service levels for the remaining route in terms of additional trains or reduced travel time.

Attention should be paid, however, to potential ridership extending beyond Virginia's borders which would be lost. It is also worth considering whether removing this segment has a human services impact; transportation options in far Southwest Virginia are already sparse, and access to passenger rail that could more quickly provide access to necessary services, particularly

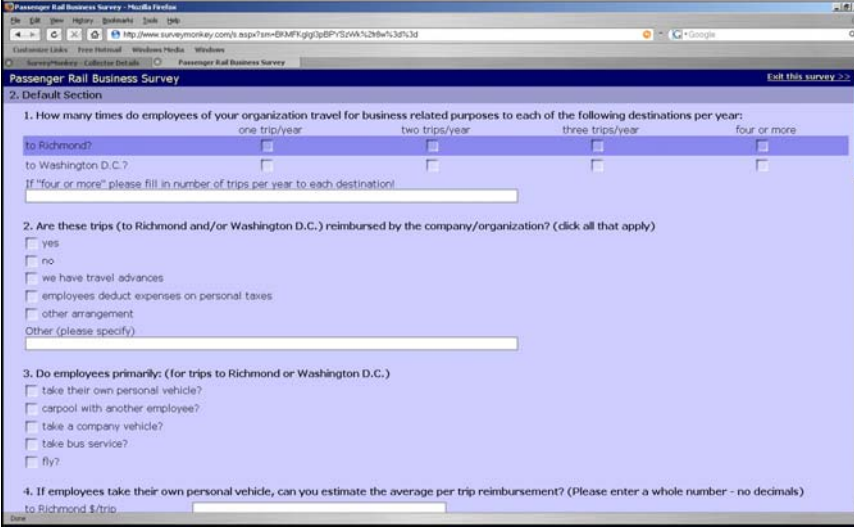
medical services in both Roanoke and Charlottesville, should be included in any decision-making process.

## Chapter 3 – Business and Nonprofit Organizational Travel Survey

### Premise

The premise behind the RVAMPO Business and Nonprofit Organization Travel Survey is that organizational policies determine business travel choices rather than individual preference. This makes intuitive sense; a business' travel reimbursement policy will have great influence on business travel choices. Employees not following business travel policy guidelines risk being denied reimbursement for business related travel.

Upon review of previous statewide Tran Dominion Express studies, RVAMPO staff regards local/regionally generated business travel as a previously under analyzed potential niche market for passenger rail service.



The screenshot shows a web browser window displaying a survey titled "Passenger Rail Business Survey". The survey is hosted on SurveyMonkey. The visible questions are:

- How many times do employees of your organization travel for business related purposes to each of the following destinations per year:  
to Richmond?  one trip/year  two trips/year  three trips/year  four or more  
to Washington D.C.?      
If "four or more" please fill in number of trips per year to each destination:
- Are these trips (to Richmond and/or Washington D.C.) reimbursed by the company/organization? (click all that apply)  
 yes  
 no  
 we have travel advances  
 employees deduct expenses on personal taxes  
 other arrangement  
Other (please specify)
- Do employees primarily: (for trips to Richmond or Washington D.C.)  
 take their own personal vehicle?  
 carpool with another employee?  
 take a company vehicle?  
 take bus service?  
 fly?
- If employees take their own personal vehicle, can you estimate the average per trip reimbursement? (Please enter a whole number - no decimals)  
to Richmond \$/trip

Below the survey form is a yellow box with the text: **Online Business and Nonprofit Passenger Rail Survey**

RVAMPO staff developed a targeted survey focused on business and nonprofit organization travel. The full text of the survey is featured in appendix A. The survey was distributed in both hard copy and web enabled format. The goal of the survey was maximum participation, as such, the survey did not rely on a random sample. Statistically speaking it is not proper to extrapolate survey results from specific respondents to the region as a whole. All reported results represent the sample who chose to respond to the survey. The survey was distributed via the following channels:

- 1) Downtown Roanoke Incorporated (DRI) Initial and follow-up survey
- 2) Forum for the Future - Valley Forward One Day Event - 09-13-2007
- 3) Salem Roanoke County Chamber Email List
- 4) City of Salem Administration
- 5) Vinton Area Chamber of Commerce
- 6) Williamson Road Area Business Association
- 7) Roanoke Regional Chamber of Commerce - Transportation Committee
- 8) Council of Community Services 211 Listserve (Non-profit and Business Organizations)
- 9) WUTF Radio Interview with follow-up link on website
- 10) Citizens Advisory Committee (CAC)
- 11) WFIR Radio Interview with follow-up link on website
- 12) Entrepreneur Summit - Civic Center - 10-05-2007
- 13) Workforce Investment Board (Board and Partners List)
- 14) Council of Community Services - Directors of Non-profit lists
- 15) Roanoke Valley Society for Human Resource Management - www.rvshrm.org
- 16) Valley Forward email list

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- 17) United Way of Roanoke Valley
- 18) New Century Technology Council (NCTC)
- 19) Roanoke Regional Chamber of Commerce Community Calendar Posting (until March 31, 2008)

It is impossible to determine how many surveys were initially distributed since each channel partner was encouraged to distribute a maximum number of surveys and a web version was available for channel partners to distribute to email and other lists.

A total of 44 surveys were received by RVAMPO staff. Since one survey was received per organization, these 44 surveys represent approximately 8,978 employees based in the Roanoke Valley as self reported on the surveys. In other words, if the 44 organizations that responded to this survey were to implement travel reimbursement policies that would favor passenger rail service for organizational travel, these policies would potentially affect 8,978 employees based in the Roanoke Valley.

Twenty one respondent organizations reported that they generated 4 or more business trips to both Richmond and the Washington D.C. area per year. One organization even filled in that they generated at least 250 business trips to the Washington D.C. area per year. Respondents reported that the average per trip reimbursement, to employees who used a personal vehicle for business travel, was \$153.57 to Richmond and \$209.43 to Washington D.C. Respondents who maintained company vehicles estimated that the average total cost (fixed and variable) of sending employees is \$110.83 to Richmond, and \$151.15 to Washington D.C. Similarly, respondents whose employees fly for business travel estimate that it costs on average \$487.50 for a round trip to Richmond and \$412 for a round trip to Washington D.C. If passenger rail is to substitute for the business trips, it is likely to do so at or below the lowest costs reported by respondents. The round trip costs reported by organizations that maintain their own company vehicles at \$110.83 to Richmond and \$151.15 to Washington D.C. will serve as an upper bound for the remainder of this analysis. In the following paragraph this report will compare these figures to reported willingness to pay for passenger rail services responses.

Respondents were asked “If passenger rail service existed between Roanoke and Richmond and/or Washington D.C., at what price would you make it a company policy that employees use passenger rail for business travel purposes?” The average responses are \$107.44 round trip to Richmond and \$145.62 round trip to Washington D.C. These responses are strikingly similar to the average estimated costs for those organizations that maintain a company vehicle. At first glance this would indicate that potential passenger rail service would merely substitute at a cost similar to company vehicle costs for the average organization. This lends evidence to the notion that passenger rail service may not yet be seen as a “High Involvement Decision” as described in Chapter Two. However, there is evidence that some organizations may be on the threshold of considering potential rail service a “High Involvement Decision” that commands a willingness to pay above minimum average costs. The standard deviation, which is a measure of how individual responses vary from the average response, is \$69.21 to Richmond and \$96.96 to Washington D.C. In other words some organizations are already willing to pay a higher price per round trip ticket.

Respondents were then asked “At the price you listed for question #7, what percentage of all business trips for your organization would be represented by passenger rail: to Richmond? to Roanoke to Washington, DC

Washington D.C.?” This question attempts to estimate relevant behavior change if the preferred round-trip ticket price were available. The average percentage of all business trips shifting to passenger rail at the preferred price is 45.87% to Richmond and 50.90% to Washington D.C. Once again these average results show a large variation among respondents with a standard deviation of 37.71% to Richmond and 33.27% to Washington D.C. A majority of respondents stated that only two round trips per day would need to be offered at the preferred price for their organization to take advantage of passenger rail service.

A majority of respondents indicate that other positive attributes of potential passenger rail service are: “Employees can do work on the train;” “Employees can rest on the train; and” “The train avoids highway accidents.”






### ***Lynchburg Survey***

Lynchburg lies 55 miles east of the City of Roanoke. The City of Lynchburg is the central city to an urbanized region that is roughly comparable to the RVAMPO service area in population. The City of Lynchburg also serves a similar role of regional hub for its immediate surroundings. In contrast to the RVAMPO service area, the Lynchburg is currently served by one AMTRAK line. Furthermore the Lynchburg Regional Chamber of Commerce has been active in promoting additional passenger rail service for the City of Lynchburg specifically advocating the TransDominion Express (TDX) concept. The Lynchburg Regional Chamber of Commerce agreed to field a modified version of the RVAMPO Passenger Rail Survey through a web enabled format. The purpose of the Lynchburg Chamber’s survey is to provide a comparison sample from a region with similar total population and with current AMTRAK service. Questions on the Lynchburg Chamber’s version of the survey were modified to reflect the fact that Lynchburg currently has passenger rail service.

A total of 17 organizations responded to the Lynchburg Regional Chamber of Commerce’s survey version. A question regarding total employment for organizations was not included in this survey version. Similar to the RVAMPO survey, Lynchburg based organizations reported that they travel 4 or more times to both Richmond and Washington D.C. for business related purposes.






#### **1. How many times do employees of your organization travel for business related purposes to each of the following destinations per year?**

##### **1(a). How many times do employees of your organization travel for business related purposes to each of the following destinations per year?: Richmond**

<b>Responses</b>	<b>Count</b>	<b>%</b>	<b>Percentage of total respondents</b>
1 Trip Per Year	3	17.65%	
2 Trips Per Year	1	5.88%	
3 Trips Per Year	1	5.88%	
4 Trips or More	11	64.71%	
(Did not answer)	1	5.88%	









<b>Total Responses</b>	<b>17</b>	<b>20%</b>	<b>40%</b>	<b>60%</b>	<b>80%</b>	<b>100%</b>
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**1(b). How many times do employees of your organization travel for business related purposes to each of the following destinations per year?: Washington, D.C.**

Responses	Count	%	Percentage of total respondents
1 Trip Per Year	3	17.65%	
2 Trips Per Year	2	11.76%	
3 Trips Per Year	0	0%	
4 Trips or More	8	47.06%	
(Did not answer)	4	23.53%	
<b>Total Responses</b>	<b>17</b>		<b>20%</b> <b>40%</b> <b>60%</b> <b>80%</b> <b>100%</b>

It is interesting to note that one Lynchburg based organization responded that employees currently use Amtrak for trips to Washington D.C. Lynchburg is on Amtrak’s “Crescent Line,” which departs Lynchburg at 6:07 am and returns at 10:06 pm. This is the only passenger rail service currently available in Lynchburg. Despite its less than convenient schedule, it is currently used for business travel purposes (www.amtrak.com)

**3. Employees (for trips to Richmond and/or Washington, D.C.): (Choose all that apply)**

Responses	Count	%	Percentage of total respondents
Take their own personal vehicle	9	52.94%	
Take a company vehicle	11	64.71%	
Take a rental vehicle	4	23.53%	
Take Amtrak from Kemper Street Station	1	5.88%	
Carpool with another employee	5	29.41%	
Take bus service	0	0%	
Fly	3	17.65%	
(Did not answer)	0	0%	
<b>Total Responses</b>	<b>33</b>		<b>20%</b> <b>40%</b> <b>60%</b> <b>80%</b> <b>100%</b>

Multiple answers per participant possible. Percentages added may exceed 100 since a participant may select more than one answer for this question.

This may indicated a penned up demand for passenger rail service that would become manifest is additional passenger rail service were available. There were no “willingness to pay” questions in this version of the survey.

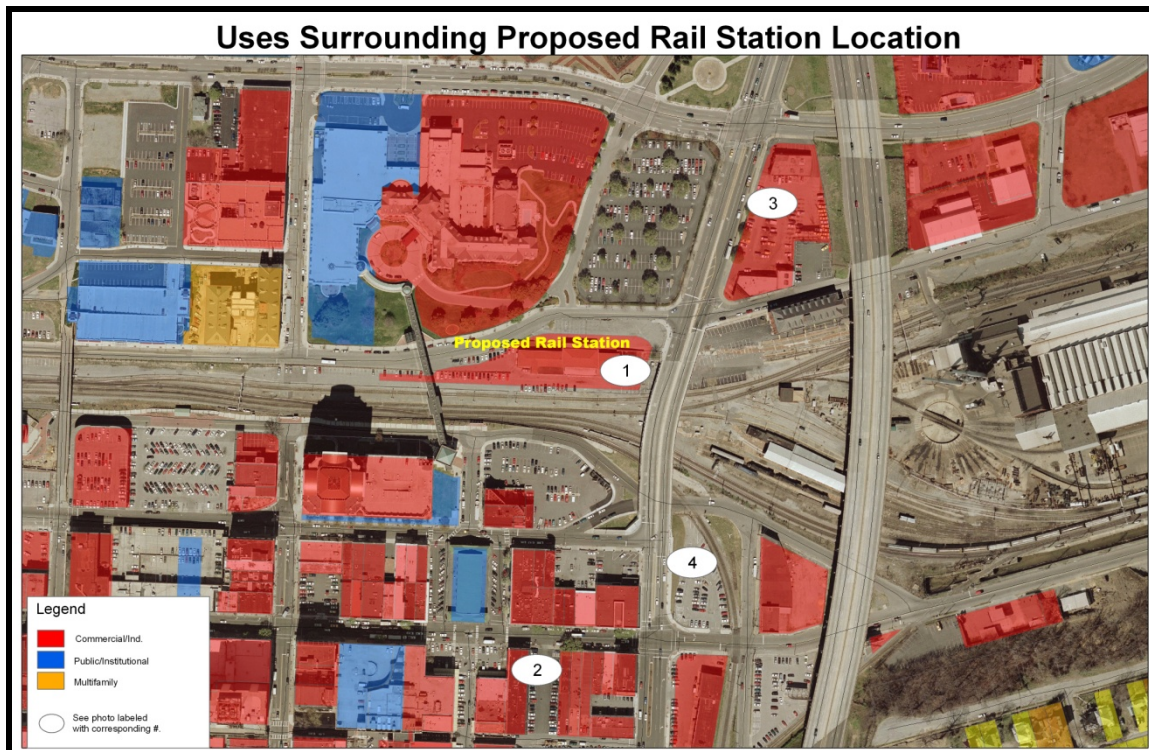


## Chapter 4 – Station and Site Impacts

The purpose of this chapter is to explain steps taken to arrive at input data for the IMPLAN economic impact model in determining potential economic impacts of the location of the proposed TDX passenger rail station in Downtown Roanoke and an alternate/complementary site in the City of Salem. This chapter will examine land uses surrounding the proposed station locations. Additional data would be needed to run a complete economic impact analysis for this project including data on business ridership and other niche markets, capital cost estimates specific to the construction of the Roanoke passenger station, and estimates of staffing and an annual operational budget for the Roanoke passenger station. There may be additional sources of data that will be required as the project development cycle unfolds making additional analysis possible.

### *Land Use Surrounding Proposed Station*

Staff prepared a map illustrating land uses surrounding the proposed rail station location at 209 Shenandoah Ave NE, which currently houses the regional visitor's center, O. Winston Link Museum, and Roanoke Valley Convention and Visitor's Bureau administrative offices. The map is included below:





TDX Reports have proposed the former passenger depot (currently housing the O. Winston Link Museum and Visitor's Center) as the location for a regional passenger station.

The map shows that the area is well developed, but that there are several vacant lots currently being used for surface parking in the vicinity of the proposed rail station. Many of these surface lots could represent development opportunities.



(Top Left): Surface parking lot on Campbell Ave SE in the Market Area.

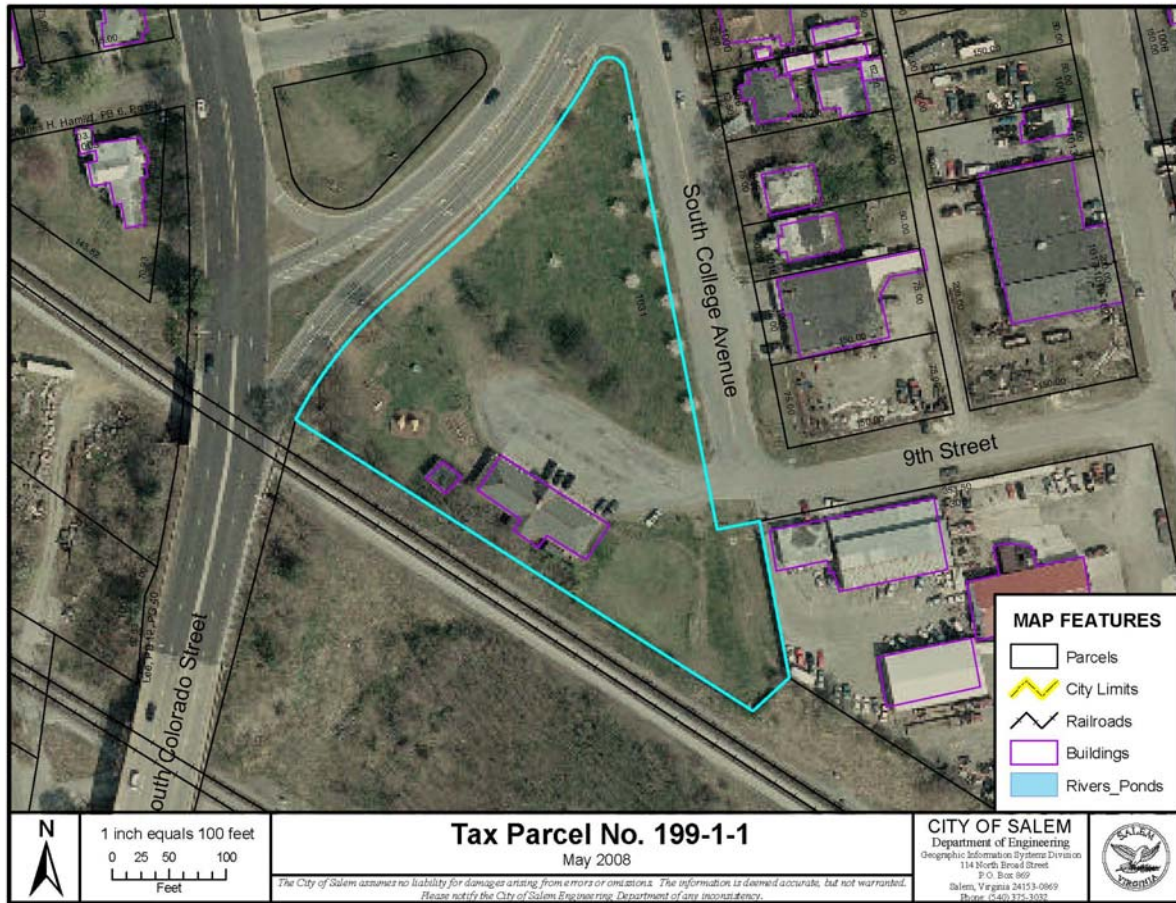
(Top Right): Surface parking lot on the corner of Campbell Ave and Williamson Rd.

(Bottom Left): Surface parking lot on the corner of Williamson Rd and Kimball Ave.



(Bottom Right): Sign advertising lot on the corner of Williamson Road and Kimball Ave for sale or lease.

In addition to the proposed site in downtown Roanoke, officials with the City of Salem alerted staff to a possible passenger rail station site in the City of Salem. A map of the Salem location is below.



The photography above shows that there are vacant parcels in the vicinity of the station in Salem.

### ***Applicable Economic Multipliers***

Using the IMPLAN Professional Economic Impact Modeling software, appropriate economic multipliers can be estimated for the renovation/construction of the rail station and for spinoff construction activity that may occur. Without a firm cost estimate of the actual station itself, it is best to report the economic multiplier which in turn can be used to estimate the impact of a station at almost any cost.

According to the IMPLAN Professional 2003 model for the Roanoke MSA, the multiplier for the construction of commercial and institutional buildings is 1.757. This means that for every dollar invested in the actual construction or renovation of a passenger rail station in

the Roanoke MSA area, there will be a corresponding .757 dollars generated in supporting economic activity.

If, for instance, renovation activities involving the construction or renovation of a passenger platform, signage, ticketing, information kiosks, etc necessary for the establishment of a station cost \$4,000,000, the total economic impact on output (regional sales) would be \$7,028,000. Any spinoff activity involving new services such as rental car booths, restaurants, newsstands, and other traveler services would likely involve additional construction and would add to the total impact. Additionally, the establishment of services in the vicinity of the rail station would actually capture sales from the travelers and hence lead to an additional ongoing economic impact for the region. Both the City of Roanoke and City of Salem sites are in urban areas with both existing development and potential redevelopment. This allows a greater proportion of the estimated Roanoke MSA area multiplier to be captured in geographic proximity to the station than would be the case for a station at a more rural location. It also allows greater potential for tourism and arts and cultural type amenities to complement potential passenger rail service.

It is impossible to formulate a reasonable economic impact of tourism that might result from the establishment of a rail station in the Roanoke region. To argue that the train will impact tourism, one would have to surmise that the person visited the region only because the train existed in the region. If the individual would already have visited the region and only switched mode of travel from plane or car to train, then there has been no real net economic benefit to the region based on that individual's visit. The previous TDX studies do a good job of addressing tourism potential from a statewide perspective.

## Chapter 5 – Recommendations and Next Steps

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There is little doubt that the concept of reestablishing passenger rail service in the Roanoke Valley ignites the imagination of a wide variety of citizens. In fact, touch screen kiosk results supporting passenger rail are remarkably consistent despite the differing demographic and social profiles of various kiosk locations. For instance, the concept of passenger rail enjoyed broad based support at both the Roanoke Regional Airport, where the kiosk was placed after security screening so only ticketed passengers had regular access to the kiosk, and the Virginia Employment Commission's Workforce One center, where a majority of respondents would have been job seekers and/or individuals in vocational and technical skills programs. However, today's public sector fiscal situation is different than that associated with the heyday of passenger rail service in the United States or the situation faced by rail operators in the European Union or Japan. Another model of financing capital improvements related to passenger rail will likely have to be developed. A model that closely resembles private sector development programs for museums and universities.

### *Assumptions:*

Any effort to obtain funds for passenger rail service to the Roanoke Valley will like be in the context of the following socio demographic and other dynamics at play over the next twenty years.

1. Federal and state transportation funds currently face erosion from declining purchasing power. Fuel taxes are assessed on a per gallon basis and not on a percentage basis. This leads to a situation of declining purchasing power over time due to inflation. However, there is a Virginia Department of Rail and Public Transportation "Rail Enhancement Fund." As of May 2008, there were 19 active applications for these funds statewide (VDRPT website 05-23-2008). It cannot be assumed that the "Rail Enhancement Fund" can provide all or even a significant percentage of the capital funding required.
2. The "Baby Boom" generation represents those born after World War II until 1964. If current retirement ages and trends continue, all members of this sizeable cohort will retire within the next 20 years. Many "Baby Boom" members are currently at the height of their earning power and professional status. Their upcoming retirement could represent a large intergenerational transfer of wealth due to the desire of individuals to see their wealth put to good use while they are alive. This represents an opportunity to incorporate private donations, grants and contributions given the proper organizational and fiscal structure.
3. The Virginia Department of Rail and Public Transportation (VDRPT) is scheduled to release a statewide Rail Plan by the end of Summer 2008. This statewide rail plan will set priorities for "Rail Enhancement Fund" allocations over the time horizon of the plan. It is likely that the Washington D.C. to Lynchburg segment will be a priority due to its favorable capital cost situation. The section from Lynchburg to Roanoke adds capital costs that are disproportionate on a per-mile basis to the Washington D.C. to Lynchburg

Segment (Personal Correspondence May 23, 2008). Therefore the focus of any private sector fundraising efforts should focus on addressing the Roanoke to Lynchburg connection.

**Options:**

Assuming the Washington D.C. to Lynchburg section is selected as a priority for “Rail Enhancement Fund” allocations, there are two basic strategies for connecting the Roanoke Valley to that corridor:

- AMTRAK “Thruway Bus” connection
- Raising private funds to entice and leverage public funds for rail service extension from Lynchburg to Roanoke

AMTRAK “Thruway Bus”: At various places throughout the country, there are Amtrak Thruway bus connections. Usually they are a dedicated bus or van connection with a train. The idea here would be a dedicated connection between Roanoke and Lynchburg connecting directly with the train. Several years ago there was a van connection with the Cardinal train at Clifton Forge - this would be in the same vein. The Amtrak national timetable shows various thruway connections, such as the one connecting Richmond with the Cardinal at Charlottesville.



**Taubman Art Museum – May 2008**

Private Fundraising: Private fundraising would follow the model of museum or university fundraising. A recent example is the \$65+ million of fundraising effort that is being used to construct the Taubman Art Museum. This strategy will be further developed in the next section.

**Medium to Long – Term Strategy – University/Museum Model of Development/Fundraising**

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In today’s public finance situation, it is not responsible for any study/plan to assume that the capital costs necessary to connect Roanoke to Lynchburg via passenger rail will be provided by government grants or government allocations alone. A far more likely scenario of success is that government funds would represent less than 50% of the total needed with the rest coming from private sources. In this situation, local governments and stakeholders working for the reestablishment of passenger rail in the Roanoke Valley could adopt a development strategy used by museums and local governments. Stakeholders would establish a 501-c3 nonprofit corporation with the power to enter into contracts and solicit donations. The board of this

nonprofit corporation would include applicable stakeholders such as: local government representatives, Norfolk Southern representatives, VDRPT representatives and stakeholders from the arts and cultural community. The nonprofit corporation would need staff either paid or volunteer to assure all accounting and legal standards are in place and maintained.

Once the nonprofit corporation is in place, it would follow a similar strategy as the Taubman Art Museum's recent fundraising success. The parallels between passenger rail and an art museum are closer than one may think at first. For instance, both passenger rail service and a museum can feature naming rights as an enticement for donations. Passenger rail could feature naming rights on rail cars (rolling stock), station amenities or gateways to and from the station. For instance a gateway sign at the end of the station "You are now entering the 'John Q. Public' passenger rail corridor." Likewise, railroads and passenger rail history enjoy a following similar to art and art museums. Recently retired successful individuals with an interest in passenger rail could be approach to help reestablish passenger rail in the Roanoke Valley within their lifetimes. The following paragraph will compare the fundraising goals for a passenger rail effort compared to the highly successful Art Museum example.

First of all, this report will make it clear that the target of fundraising efforts should be the "Capital Costs," consisting primarily of rail and rail siding upgrades from Roanoke to Lynchburg. The Roanoke to Lynchburg segment is emphasized for several reasons:

- The capital costs from Lynchburg to Roanoke are disproportionately higher on a per mile basis than the capital costs from Alexandria to Lynchburg (Miller, email 02-04-2008);
- The Alexandria to Lynchburg segment is under consideration in VDRPT's state rail planning process (Kevin Page, VDRPT Chief of Rail, Presentation 12-18-2007, Lynchburg Chamber of Commerce); and
- Private sector donations from the Roanoke Valley should be applied to improvements in geographic proximity to the Roanoke Valley.

Operation costs were reported as a per mile figure in Chapter Two. The marginal increase in mileage from Lynchburg to Roanoke should figure into total system operations costs and should only incrementally increase for the Lynchburg to Roanoke segment. However, capital costs, in 2001 dollars, for the Roanoke to Lynchburg segment are estimated to be \$29.6 million. This compares to an estimated \$40.5 million (2001 dollars) for the Alexandria to Lynchburg segment. (Miller, email 02-04-2008) In other words, the Roanoke to Lynchburg segment is estimated to cost around 73% of Alexandria to Lynchburg costs at a much shorter segment length.

With this in mind, the fundraising target for a passenger rail campaign would be around \$30 million. This is less than half of the funds that were recently raised for the Taubman Art Museum. This is a positive sign, because it proves that large sums of money can be raised with the right fund raising campaign and a dedicated staff/volunteers.

## **Short Term Strategy – Bus Connector Service**

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A feasible short term strategy is to pursue bus connector service to passenger rail service in Lynchburg and Clifton Forge. A bus connector service would allow access to any expanded rail service in Lynchburg that results from the forthcoming VDRPT statewide rail plan. A disadvantage of the bus connector service would be a lack of a sense of permanence that rail often provides and the need to transfer from the bus service to the train at the transfer point. Amtrak currently partners with Greyhound bus lines for its “Thruway Motorcoach” service. Greyhound does currently have a station at the Campbell Court transfer center in downtown Roanoke.



## Impacts of Passenger Rail Business Survey

**Background:** Passenger rail is an often-mentioned topic at a wide variety of public forums or public participation in planning events. The idea of re-establishing passenger rail is supported by citizen input received by the Roanoke Valley Area Metropolitan Planning Organization (RVAMPO). The RVAMPO is responsible for the “Constrained Long-Range Transportation Plan” (CLRTP) for the Roanoke Valley Area. RVAMPO staff members have two primary approaches to gather public input in the planning process:

- **Electronic Touch Screen Kiosk**, which has been housed at various locations including the Higher Education Center, VEC’s Workforce One Center, Roanoke Regional Airport, Virginia Western Community College, DMV and Tanglewood Mall.
- **Neighborhood Association/ Civic League Focus Groups**

Both of these methods have garnered numerous responses concerning the re-establishment of passenger rail service in the Roanoke Area.

**Purpose:** This study is not designed to redo, supercede or otherwise “reinvent the wheel” of previous studies and statewide efforts concerning passenger rail. The purpose of this study is to investigate the possible impact that passenger rail, should it be established, would have on the Roanoke Valley. One way of proceeding is to investigate any overlooked or niche markets that were not considered in the previous studies. Business conference/ meeting travel may represent one such “underestimated” passenger rail market that is significant to Roanoke businesses. Your participation in this survey will help us quantify if any “underestimated” or niche markets exist in business conference travel using passenger rail.

**Instructions:** Please respond to the following questions in the context of your entire business or organization’s operations in the Roanoke Valley. All responses will be used for the purposes of this study only and will not be sold, transferred or used for purposes outside of the regional transportation planning process.

**1) How many times do employees of your organization travel for business related purposes to each of the following destinations per year:**

to Richmond? \_\_\_ one trip/year \_\_\_ two trips/year \_\_\_ three trips/year \_\_\_ four or more \_\_\_  
to Washington D.C.? \_\_\_ one trip/year \_\_\_ two trips/year \_\_\_ three trips/ year \_\_\_ four or more  
\_\_\_\_\_ (please fill in)

**2) Are these trips (to Richmond and/or Washington D.C.) reimbursed by the company?**

\_\_\_yes                    \_\_\_we have travel advances                    \_\_\_other arrangement  
\_\_\_no                    \_\_\_employees deduct expenses on personal taxes

**3) Do employees: (for trips to Richmond or Washington D.C.)**

\_\_\_\_\_ take their own personal vehicle? \_\_\_\_\_ carpool with another employee?  
\_\_\_\_\_ take a company vehicle? \_\_\_\_\_ take bus service?  
\_\_\_\_\_ fly?

**4) If employees take their own personal vehicle, can you estimate the average per trip reimbursement:**

to Richmond? \$ \_\_\_\_\_/trip or \$ \_\_\_\_\_/mile  
to Washington D.C.? \$ \_\_\_\_\_/trip or \$ \_\_\_\_\_/mile

**5) If employees take a company vehicle, what is the average cost per trip to the company factoring fuel, maintenance, insurance and upkeep:**

to Richmond \$ \_\_\_\_\_  
to Washington D.C.? \$ \_\_\_\_\_

**6) If employees fly, can you estimate the average ticket price:**

to Richmond? \$ \_\_\_\_\_  
to Washington D.C.? \$ \_\_\_\_\_

**7) If passenger rail service existed between Roanoke and Richmond and/or Washington D.C., at what price would you make it a company policy that employees use passenger rail for business travel purposes:**

round-trip ticket price to Richmond? \$ \_\_\_\_\_  
round-trip ticket price to Washington D.C.? \$ \_\_\_\_\_  
We would reimburse for a personal vehicle trip regardless. \_\_\_\_\_  
We would provide a travel allowance of \$ \_\_\_\_\_ and allow the employee to chose.  
Other: \_\_\_\_\_

**8) At the price you listed for question #7, how many business trips (round trips) do you think your organization would produce in a year (number of employees TIMES trips per employee):**

to Richmond? \_\_\_\_\_  
to Washington D.C.? \_\_\_\_\_  
Not Applicable \_\_\_\_\_

**9) At the price you listed for question #7, what percentage of all business trips for your organization would be represented by passenger rail:**

to Richmond? \_\_\_\_\_  
to Washington D.C.? \_\_\_\_\_  
Not Applicable \_\_\_\_\_

**10) How many round trips per day should be offered in order for you to use passenger rail for business trips at the price you listed in Question #7 (assume one round trip would depart Roanoke in the morning and return in the evening at a minimum):**

to Richmond? \_\_\_\_\_

to Washington D.C.? \_\_\_\_\_  
We would not use passenger rail. \_\_\_\_\_

**11) How many employees do you have based in the Roanoke Valley?**

**12) Do you bring in business travelers for meetings to the Roanoke Valley:**  
from Richmond? How many per year?  
from Washington D.C.? How many per year?

**13) Our business/ organization would benefit from passenger rail for other reasons (check all that apply):**

Our employees could do work on the train (i.e. with a laptop)  
 Our employees could rest on the train  
 The train avoids highway accidents  
 Other reasons \_\_\_\_\_

**14) How fast would a one-way trip have to be for you to use the service at the price you indicated:**

-to Richmond  3 ½ hours  4 hours  5 hours  6 hours or less  
-to Washington D.C.  4 ½ hours  5 hours  6 hours  7 hours or less

**15) At what time would you need to arrive?**

-in Richmond  before 8:00 am  8:00 am  9:00am  10:00am  
-in Washington D.C.  before 8:00 am  8:00 am  9:00am  10:00am

**16) At what time would you need to arrive in the Roanoke Area (return trip)?**

before 4:00pm  4:00 pm  5:00pm  6:00pm  7:00pm or later

**17) Would you require transit at the station in \_\_\_\_\_ Richmond? \_\_\_\_\_ Washington D.C.? If so what frequency of transit at a minimum?**

every 5 min  every 10 min  every 30 min  every hour

**18) Additional input concerning passenger rail (please provide below):**

**Name of Company** \_\_\_\_\_

**Primary Contact Person** \_\_\_\_\_

**Approximate # of Employees in Roanoke Area** \_\_\_\_\_

Please Return Completed Surveys to:

Mark McCaskill, RVARC, PO Box 2569, Roanoke VA  
24016

Fax 540-343-4416

Email mmccaskill@rvarc.org

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