

**Richmond Regional
Transportation Planning Organization
Scenario Planning Peer Exchange Workshop**

**Richmond, Virginia
November 19-20, 2014**

**Sponsored by the
Federal Highway Administration**



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Host Agency: Richmond Regional Transportation Planning Organization / Richmond Regional Planning District Commission (RRTPO/RRPDC)

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Workshop Attendees: See [Appendix B](#)

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Executive Summary

This report documents a two-day scenario planning workshop held November 19 to 20, 2014, in Richmond, Virginia. The Federal Highway Administration (FHWA) sponsored the workshop under its Scenario Planning Program, which is run jointly with the Federal Transit Administration (FTA). The Richmond Regional Transportation Planning Organization (RRTPO), part of the Richmond Regional Planning District Commission (RRPDC), hosted the event.

The workshop introduced scenario planning to a variety of stakeholders, including RRTPO and RRPDC staff and representatives from local, State, and Federal agencies as well as the private sector. Representatives from RRTPO's Technical Advisory Committee, Citizens Transportation Advisory Committee, and Elderly and Disability Advisory Committee also participated. Approximately 40 participants attended; see [Appendix B](#) for a list of workshop participants.

RRPDC is the regional planning agency for nine counties in the Richmond region, and serves a population of approximately 1 million. RRTPO, as part of the RRPDC, serves as the metropolitan planning organization (MPO) and addresses transportation planning and programming in the region. RRTPO is currently updating the region's long-range transportation plan (LRTP) and is considering how scenario planning can be used in this update. RRTPO plans to use a scenario planning approach more extensively in the next iteration of its LRTP in 2016. RRTPO requested the FHWA-sponsored workshop to learn more about the scenario planning process and to gain insights from peer agencies about effective practices for developing and implementing scenarios.

During the workshop, RRTPO staff presented information about trends related to current and anticipated development patterns in the Richmond region. The trend information presented also provided a background for group discussions throughout the event as participants offered ideas about potential themes and challenges for the region and ways to translate them into scenarios.

Three peer experts shared their scenario planning experiences:

- Beth Alden, Assistant Executive Director, Hillsborough Metropolitan Planning Organization for Transportation (Hillsborough MPO).
- Kirk Brethauer, Information Systems Director, Southwestern Pennsylvania Commission (SPC).
- Lew Villotti, Planning and Development Director, SPC.

The peers presented on how they use scenario planning and also shared insights on useful techniques and strategies. Key themes that emerged from the peers' presentations included:

- Importance of stakeholder engagement and outreach.
- Performance measures and visualization techniques.
- Use of "stories" as part of the scenario planning process.
- Development of scenarios in connection with a region's context and past plans.

The second day of the workshop focused on technical discussions about performance measures, implementation plans, and best practices. Roundtable discussions with the peers, RRTPO, and FHWA staff helped to share lessons learned on these topics.

The workshop provided RRTPO staff and stakeholders an opportunity to learn from a panel of expert peers with extensive scenario planning knowledge. RRTPO intends to use the information provided during the workshop to inform future updates of its LRTP. Post-workshop evaluations submitted by participants indicated that there was consensus that it was a good exchange of information and ideas and that participants felt they had gained a stronger understanding of scenario planning and its applications.

I. INTRODUCTION

The Richmond Regional Transportation Planning Organization (RRTPO) is the metropolitan planning organization (MPO) for the Richmond region, serving a population of approximately 1 million across 2,165 square miles and 9 counties (see Figure 1).¹ RRTPO is a division of the Richmond Regional Planning District Commission (RRPDC), the area's regional planning agency. RRPDC addresses issues of regional significance, provides technical assistance, and promotes the region's interests related to economic development, transportation, environment, and social and demographic elements. RRTPO's focus, as the MPO, is specific to transportation, leading activities for the development of transportation plans and programs.

RRTPO is updating its current long-range transportation plan (LRTP), *plan2035*, adopted in July 2012.² The next LRTP, which will cover the time period through 2040, is anticipated for adoption in 2016. As the 2016 update is underway, RRTPO does not intend to use scenario planning extensively for this update; however, during the workshop, RRTPO identified opportunities where it could potentially begin using elements of scenario planning in its current efforts. RRTPO intends to use a more comprehensive scenario planning approach for the *next* update of its LRTP beginning in 2016, which will address the year 2045 and beyond. RRTPO noted that since an effective scenario planning process can take up to two years, getting an early start will allow for thorough planning.



Figure 1. RRTPO/RRPDC counties.
RRTPO/RRPDC serve nine counties in Virginia.
Source: [RRPDC](#).

The FHWA scenario planning workshop allowed RRTPO to gain insights into practices that it can implement in the near term to prepare for using a strategic scenario planning approach for the next LRTP update in 2016. Two peer agencies—Hillsborough MPO for Transportation (Hillsborough MPO) and Southwestern Pennsylvania Commission (SPC)—shared their experiences in applying and implementing scenario planning. Workshop attendees also participated in two interactive exercises: a discussion of key themes and challenges facing the region as identified by participants; and an exercise where participants sorted and prioritized these themes and challenges to begin translating them to demonstrate the considerations that RRTPO will likely need to address when developing its scenarios.

On the second day of the workshop, RRTPO staff led roundtable discussions with the peer experts and FHWA representatives continuing the themes from the previous day and identifying potential next steps for RRTPO's scenario planning activities. Roundtable discussions focused on performance measures, implementation plans, and best practices.

¹ According to the U.S. Census, the 2010 population was 1,002,696. RRTPO serves the following counties in Virginia: Ashland, Charles City, Chesterfield, Goochland, Hanover, Henrico, New Kent, Powhatan, and Richmond. For more information, please visit: http://www.richmondregional.org/About_Us/about_us.htm. In October 2014, RRTPO became the new name for the agency (previously known as the Richmond Area MPO). Images included in this report may feature the previous RAMPO seal if developed prior to this time. Any RAMPO images used in this report relate to the current RRTPO.

² More information on *plan2035* is available at: <http://www.richmondregional.org/TPO/LRTP.htm>. The LRTP must be updated at least every four years.

II. PRESENTATION AND DISCUSSION HIGHLIGHTS

Welcome and Introduction

RRTPO/RRPDC and FHWA representatives offered introductory remarks and welcomed participants to the workshop. Brian Betlyon, Metropolitan Planner with the FHWA Resource Center, served as facilitator for the event.

Robert Crum, RRPDC Executive Director, discussed how scenario planning can be a useful tool for the Richmond region, particularly in working with the region's many stakeholders. Mr. Crum emphasized the workshop's goal of information exchange, and encouraged participants to take advantage of the knowledge and expertise of the scenario planning peers.

FHWA Virginia Division Administrator Irene Rico echoed Mr. Crum's remarks on the benefits of scenario planning for the region. Successful scenario planning actively involves the public, elected officials, business leaders, and other stakeholders on a broad scale. Ms. Rico also described scenario planning's connections to the Moving Ahead for Progress in the 21st Century Act (MAP-21). MAP-21 focuses strongly on performance-based planning. Ms. Rico noted that scenario planning is a tool that agencies can use to apply and evaluate performance measures or indicators and advance traditional planning processes. The connections between scenario planning and public involvement and scenario planning and performance-based planning would continue to be significant themes throughout the workshop.

In closing the introductions, Mr. Betlyon asked participants to share information using keypad polling technology. Keypad polling technology is often used in scenario planning exercises to collect feedback in a meeting setting. He provided each participant with a keypad and posed a series of questions that they were asked to answer using their keypads, which provide anonymous responses and allow participants to view all of the responses in real time. Mr. Betlyon asked participants two questions as part of the workshop's opening session (see Figure 2):

- What type of agency do you represent?
- How would you rate your knowledge of scenario planning techniques?

Keypad responses noted that the majority of participants (34 percent) represented an MPO. City/county was next with 28 percent, followed by State agency, citizen, and other (all at 10 percent). Federal agency representation was the least at 7 percent. Responses to the second question indicated that most participants were somewhat familiar with scenario planning (45 percent), with 27 and 9 percent of respondents noting that they were intermediate or advanced in their knowledge of scenario planning techniques, respectively. Eighteen percent of the respondents shared that they were not familiar with scenario

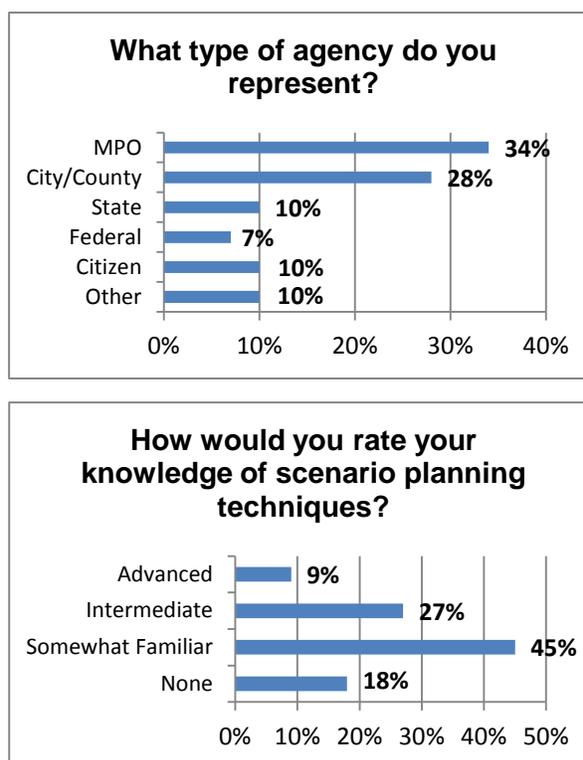


Figure 2. Keypad poll questions and responses.

planning. Mr. Betlyon used the questions to familiarize participants with each other and demonstrate the keypad polling technology.

Federal Overview of Scenario Planning

Rae Keasler, Transportation Specialist with FHWA, and Mr. Betlyon discussed the origins and benefits of scenario planning, provided case study examples of scenario planning activities, and described the FHWA-FTA Scenario Planning Program. The Scenario Planning Program is part of a larger joint program known as the Transportation Planning Capacity Building (TPCB) Program, which is offered by FHWA and FTA. The TPCB Program provides resources and tools to assist decisionmakers, transportation officials, and staff develop the skills and knowledge needed to achieve effective transportation planning practices.³

Scenario planning has a long history. It was originally used in a military context in the 1960s and later was adopted by businesses, government, and nongovernment organizations. Today, transportation agencies often use the scenario planning process to assess and prepare for possible conditions using multiple plausible stories about the future. By developing and comparing scenarios, agencies can facilitate a common understanding of a community's values and how these values relate to factors affecting transportation, such as demographics, land use patterns, economic development, and technological innovations. These scenarios can then help a community plan strategically to allocate investments. The scenario planning approach is an enhancement of, not a replacement for, the traditional transportation planning process and can be adapted to fit different purposes, scales, and areas. Scenario planning from the beginning stages through implementation typically takes approximately 12 to 36 months.

Scenario planning offers many benefits, including:

- Opportunities for more strategic transportation and land use decisionmaking
- Active stakeholder involvement
- Dialogue among transportation and land use professionals, and members of the community
- Consensus building

Figure 3. Benefits of scenario planning.
The scenario planning approach has a wide range of benefits for transportation agencies and stakeholders.

Scenario planning offers a variety of benefits (see Figure 3). The approach includes an extensive public involvement component, which helps transportation agencies better understand what a community wants and values for the future; agencies can then use these values (e.g., land use patterns) to explore their impacts on transportation. Scenario planning allows for interactions among scenarios to compare transportation choices and consequences. This approach can help promote a greater interest from a broader set of the population by reducing technical jargon and presenting scenarios in a visually appealing and accessible way.

MAP-21 includes language that provides the option for MPOs to use scenario planning.⁴ Under MAP-21, when applying a scenario planning approach, MPOs should consider components such as regional investment strategies, population, and employment; revenue constrained scenarios; and the estimated costs and potential revenues available to support each scenario.

Mr. Betlyon discussed two noteworthy examples of scenario planning—one that focuses on the process of doing scenario planning, and the other on the outcomes scenario planning can initiate:

³ To access the TPCB Program website, please visit: www.planning.dot.gov/. For information on the FHWA-FTA Scenario Planning Program, please visit: www.fhwa.dot.gov/planning/scenario_and_visualization/scenario_planning/.

⁴ Information about MAP-21 is available at: www.fhwa.dot.gov/map21/.

- *Process*—The San Luis Obispo Council of Governments (SLOCOG) in San Luis Obispo, California, actively engaged stakeholders and the public as part of its scenario planning activities. Citizens participated in interactive keypad polling and mapping exercises and shared feedback on community values, themes, and challenges related to transportation investments in the region.
- *Outcomes*—Binghamton Metropolitan Transportation Study in Binghamton, New York, used a scenario planning approach while updating its LRTP. In working with stakeholders, the agency created a vision that addressed community goals and values, which then fed into the local county’s economic development plan.

Lastly, Mr. Betlyon presented on the FHWA-FTA Scenario Planning Program. FHWA and FTA established the program to offer training and resources for scenario planning practitioners, including workshops, webinars, and written materials. Since 2004, the program has supported more than 20 scenario planning workshops in over 16 States. FHWA and FTA have also developed a scenario planning [guidebook](#) that explains the six key phases of scenario planning. The six phases are:

- | | |
|--|---|
| • How should we get started? | • What could the future look like? |
| • Where are we now? | • What impacts will scenarios have? |
| • Who are we and where do we want to go? | • How will we reach our desired future? |

These six stages provide a strong starting point for agencies considering or interested in learning about scenario planning. The peers’ presentations and discussions that followed during the workshop also demonstrate how these stages can be implemented.

Trends in the Region

Dan Lysy, RRTPO Director of Transportation, provided an overview of the trends in the Richmond region. His presentation focused on demographic trends, mode statistics forecasted as part of *plan2035*, and regional land use characteristics.

Demographic Trends

The Richmond region is growing. Between 2008 and 2035, RRTPO anticipates the population to increase by 43.5 percent and households to grow by 49.5 percent. Most of this growth will likely impact Richmond’s urbanized area and suburbs; however, several of the region’s more rural counties (e.g., New Kent, Powhatan) are expected to grow significantly.⁵ Automobile use and employment are also expected to increase, tracking with the growth in population and households.

Mr. Lysy also provided updates on specific population subgroups, including the elderly, persons with disabilities, and low-income populations, based on information from the U.S. Census and American Community Survey.⁶

2035 LRTP Modes

Richmond’s regional travel demand model covers the entire Richmond region and shows the major parts of the region’s transportation network. Mr. Lysy shared a series of maps relating to the travel

⁵ For example, the number of households in New Kent County was 6,965 in 2008 and is anticipated to be 13,714 in 2035, an increase of 83.2 percent. The number of households in Powhatan was 9,858 in 2008 and is anticipated to be 19,821 in 2035, an increase of 101.1 percent. Numbers are courtesy of RRTPO socioeconomic data 2008-2035.

⁶ Approximately 12 percent of the Richmond region’s population is elderly. Approximately 11 percent of the population represents persons with disabilities; the same percentage holds for the region’s low-income population. The elderly population figure is as of the 2010 U.S. Census. The persons with disabilities and low-income population numbers are from the American Community Survey, 2007-2011 5-Year Estimates.

demand model network, level of service (LOS), transit, bicycle-trail corridors, and intermodal network. While the region is one of the least congested in the country, a few areas of congestion exist within the City of Richmond limits, particularly along Interstate 95 (I-95). The current transit network primarily serves the City, with local and express transit routes stemming from the City center. Park-and-ride locations are scattered throughout the surrounding suburban areas. The Greater Richmond Transit Company is the region's primary provider.

The bicycle and trails network continues to expand (see Figure 4), with two existing bicycle trails (Routes 1 and 76). Other trails under development include the Virginia Capital Trail, East Coast Greenway, and James River Heritage Trail.⁷ The region also has a strong intermodal service network with connections to I-95 and I-85 and Routes 360 and 460. Port activity via the Port of Richmond is also anticipated to increase as new traffic comes through the expanded Panama Canal.

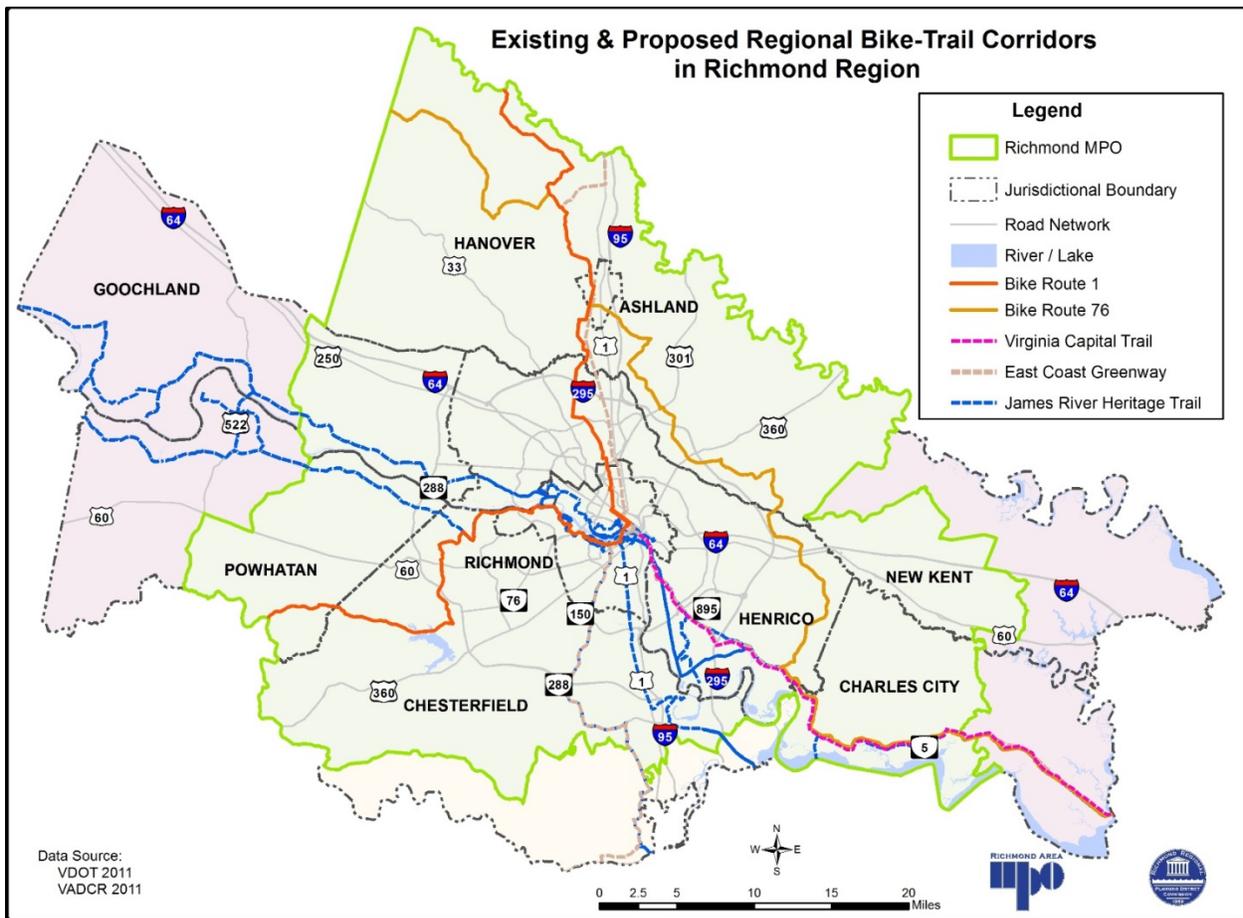


Figure 4. Existing and proposed regional bike-trail corridors in the Richmond region.
 Source: RRTPO/RRPDC.

⁷ The Virginia Capital Trail will connect Jamestown and Richmond along the Route 5 corridor. For more information, please visit: <http://virginiacapitaltrail.org/>. Information on the East Coast Greenway, a trail system that will link major cities along the Eastern Seaboard, is available at: <http://www.greenway.org/>. The James River Heritage Trail follows the James River across Virginia, from the Allegheny Mountains to Chesapeake Bay. Additional information is available at: http://www.dcr.virginia.gov/recreational_planning/trailjr.html.

Regional Land Use Characteristics
 Lastly, Mr. Lysy addressed land use characteristics across the region (see Figure 5). Most of the region is open space attributed to forest, agriculture, or parks. In planning for future growth and development, RRTPO conducted a green infrastructure study to identify areas of ecological and environmental significance.⁸ The study also recognized areas of “undeveloped” land within the water/sewer service area that could potentially be developed in the future. RRTPO is evaluating these land use needs with future population and employment projections to identify potential opportunities for strategic growth and investment.

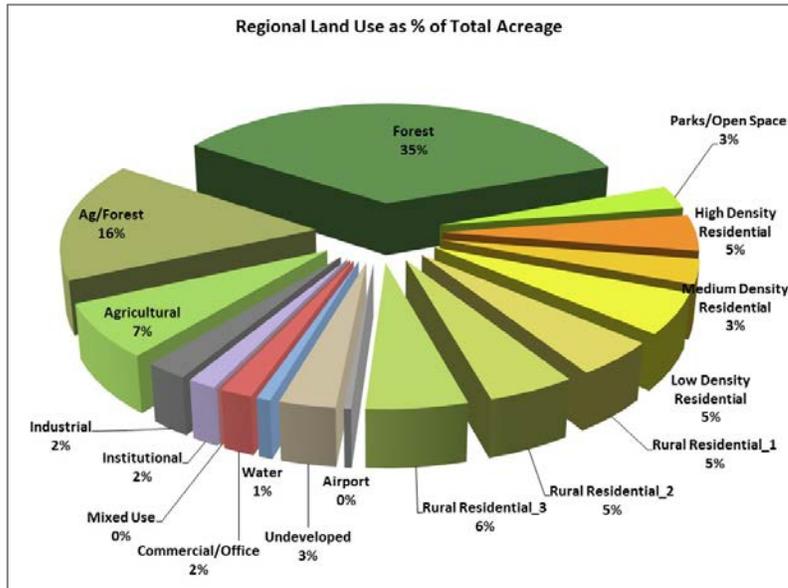


Figure 5. Richmond region's land use by percent of total acreage.
 Source: RRTPO/RRPDC.

Peer Approaches to Scenario Planning

Two peer agencies—Hillsborough MPO and SPC—shared their experiences in using scenario planning and discussed best practices. The two peer sessions held during the workshop focused on two topics: a) integrated land use and transportation in scenario planning; and b) scenario analysis and implementation. Please see Appendix C: *Session Questions and Responses* for questions and responses provided throughout the sessions.

Integrating Land Use and Transportation in Scenario Planning

Beth Alden, Hillsborough MPO

Ms. Alden focused her presentation on Hillsborough MPO’s recent scenario planning initiative, Imagine Hillsborough 2040 (Imagine 2040). The initiative, led in partnership with the Hillsborough Planning Commission, sought input from the public and local stakeholders through a scenario planning process to imagine possible futures for Hillsborough County in the year 2040. Imagine 2040 provided an opportunity to update the region’s L RTP as well as four local comprehensive plans so that transportation and land use issues could be addressed together and with the same planning horizon of 2040.⁹

Hillsborough County is similar in size to the Richmond region, with approximately 1.3-million residents across 1.266 square miles. The region’s assets include a significant amount of agricultural (25 percent) and preserved (10 percent) lands. Challenges facing the region include traffic congestion, pedestrian safety, and economic growth/stability. Hillsborough MPO used these themes and challenges as discussion points throughout its scenario planning process.

⁸ For more information and to view the report, please visit: http://www.richmondregional.org/planning/Green_Infrastructure/green_infrastructure.htm.

⁹ The Planning Commission is responsible for developing comprehensive plans for Hillsborough County and the three cities in the county: Tampa, Temple Terrace, and Plant City. The Hillsborough MPO leads the long-range transportation planning process for these jurisdictions, including the development and regular updating of the region’s L RTPs.

Hillsborough MPO launched its scenario planning effort in 2012, starting an approximately 2-year process. The MPO focused its activities under the following two separate phases.

Phase One

Under the first phase of Imagine 2040, the MPO created three scenarios, or “stories,” about the future. The features of each scenario were exaggerated so that the differences among the scenarios could be shown more clearly and allow for discussion about tradeoffs. Throughout its public outreach, the MPO emphasized that the future would likely contain various elements from each of the scenarios, and that a recommended hybrid scenario would be developed later. The three scenarios were:

- **Suburban Dream**, which looked at what might happen as development continues to expand outward as it has in recent decades.
- **Bustling Metro**, which addressed focusing growth in cities and towns and investing in transit.
- **New Corporate Centers**, which emphasized business growth along major highways with express toll lanes.

With the scenarios and twelve performance measures in place, Hillsborough MPO created a public engagement website and parallel PowerPoint presentation. The MPO used the presentation and on-the-spot survey at public meetings along with the online survey to collect feedback from the community. The website posed a series of questions to visitors, asking them about their values and what topics were important to them (e.g., job creation, infrastructure costs, agriculture/farming impact, shorter commutes) and preferences related to accommodating new housing and jobs, providing transportation options, and paying for needed infrastructure (see Figure 6). Preferences were expressed with a one-star to five-star rating system to obtain greater nuance.

Feedback provided through the scenario planning outreach effort allowed Hillsborough MPO to develop a hybrid scenario that takes into account the additional 600,000 residents and 400,000 jobs anticipated in the year 2040. It also made the case for two difficult public policy decisions: expanding the urban services boundary in a handful of areas, and investing in fixed guideway transit to incentivize infill and redevelopment in a central corridor. The hybrid scenario recognized the values stakeholders had indicated throughout the outreach process, including the importance of having high-quality jobs and choices of where to live, work, and travel. The information from Phase One helped the MPO develop a long-range vision for the region.



Figure 6. Hillsborough MPO used a series of questions like those on the slide above, to collect input and refine the scenarios.

Source: Hillsborough MPO.

Phase Two

To bring the scenario planning process into the cost-feasible LRTP update, Phase 2 added a financial dimension. In order to make the choices simple enough for a survey, Hillsborough MPO grouped potential projects into categories and developed performance metrics for the four resulting investment programs at low, medium, and high levels.¹⁰ The goal of Phase 2 was to allow the public to craft their own spending scenarios, which translated into the development of alternative financial plans for the LRTP. While Phase 1 focused on strategies for growth in Hillsborough County, Phase 2 addressed how the MPO and its partners could direct the limited available resources to best implement the stated goals and priorities. The input collected demonstrated majority support for raising revenue to achieve widely desired outcomes.

Ms. Alden shared lessons learned as part of Hillsborough MPO's scenario planning process:

- **Use a variety of outreach methods to reach a variety of stakeholders.** Hillsborough MPO consistently promoted Imagine 2040 and provided feedback opportunities through its website, presentations to civic groups, interactive displays at community events, and other more novel approaches. The MPO participated in 94 civic meetings and events, set up 49 unmanned interactive kiosks in public locations around the county (e.g., at malls, recreation centers), and used polling software to collect feedback. The MPO also leveraged partnerships with the *Tampa Bay Times*, the Florida Home Show, and local community organizations to promote Imagine 2040.¹¹ Phase 1 received 3,529 survey responses, the most significant public outreach on the MPO's transportation plans to date.
- **Consider the pacing of information and input requests.** Hillsborough MPO divided its scenario planning effort into two phases to collect information on land use/growth scenarios first and on financial scenarios second. Some performance outcomes are more affected by the geographic distribution of growth, and other outcomes are not. The two-phased approach allowed the MPO to build robust outreach methods for each phase while simplifying the questions being asked of stakeholders in a given phase. As the MPO's financial future contained uncertainties, the approach also provided an opportunity to focus on investments and expenditure levels later in the process when these uncertainties were better known.
- **Create scenarios to demonstrate the differences in scenario characteristics.** Hillsborough MPO intentionally created its scenarios to exaggerate differences and have noticeable variations in the performance measures. For each step of its scenario planning process, the MPO asked stakeholders to share their preferences on either scenarios or performance measures used to evaluate scenarios. This continuous feedback loop provided the MPO with stakeholder input throughout the Imagine 2040 effort.
- **Use the community's expressed values as design principles.** Scenarios were shaped by a citizen working group and informed by public opinion research. Coming out of a deep recession, job growth was a high priority, as was directing public investment first towards essential services like maintenance and safety. The surveys gained credibility by allowing citizens to choose growth plans and investment plans that delivered on their values, though some drawbacks to those choices were illustrated.

¹⁰ The four investment categories were: Preserve the System; Reduce Crashes and Vulnerability; Minimize Traffic for Drivers and Shippers; and Real Choices for Non-Drivers.

¹¹ For example, the *Times*' website featured a link to the Imagine 2040 website. The MPO provided information at the Home Show, targeting local visitors. In addition, the MPO's launch event for Imagine 2040 took place at a go-cart racing event with local stakeholders present and the theme "Race to the Future." Lastly, the MPO partnered with its local property appraiser to include Imagine 2040 leaflets in property appraisal correspondence sent to homeowners.

Lew Villotti, SPC

SPC is the MPO for southwestern Pennsylvania, serving 10 counties, 548 municipalities, and 2.66 million residents across more than 7,000 square miles. In addition to being the MPO, SPC acts as the region's Economic Development District and Local Development District, in partnership with the Appalachian Regional Commission.

SPC used scenario planning in developing its 2040 Transportation and Development Plan for Southwestern Pennsylvania, an update to the SPC 2035 LRTP.¹² Adopted in 2011, the 2040 Plan addressed elements of transportation, land use, and economic development using a scenario planning approach. As SPC's scenario planning effort is now complete, Mr. Villotti shared perspectives on best practices for integrating community feedback, land use, and transportation considerations into the scenario planning process.

Mr. Villotti focused his presentation on the following themes:

- **Scope the effort and engage partners.** SPC followed the mantra, "Empower the Region," in its scenario planning initiative, known as "Project Region." Citizens, communities, and all sectors were invited to participate. SPC established principal, working group, and partner designations to clearly define stakeholder organizations' roles and responsibilities. The "partners" included close to 400 members from the public, private, civic, and philanthropic sectors; local, State, and Federal Government; and school districts, community groups, and citizens.
- **Acknowledge prior work.** A key element of SPC's effort was to recognize past reports and other materials that would help set the context for Project Region. SPC prepared a "Regional Perspectives" summary in which it illustrated the basic trends in the region and common themes from prior publications. From this research, SPC developed policy statements about the region; as part of the scenario planning process, SPC worked with stakeholders to refine these statements.
- **Establish future goals and aspirations based on local values.** SPC incorporated community feedback into its scenario planning process using creative methods. At partner meetings, SPC coordinated seating assignments to ensure there was a diverse range of participants at each table. SPC often required participants to come to consensus and decide as a table the answer they wished to provide to a question asked. As part of this process, SPC also focused on providing transparent inputs, immediate outcomes, and time for further discussion. SPC found keypad polling to be effective in offering transparency and real-time information. After polling results were presented during a meeting, the agency

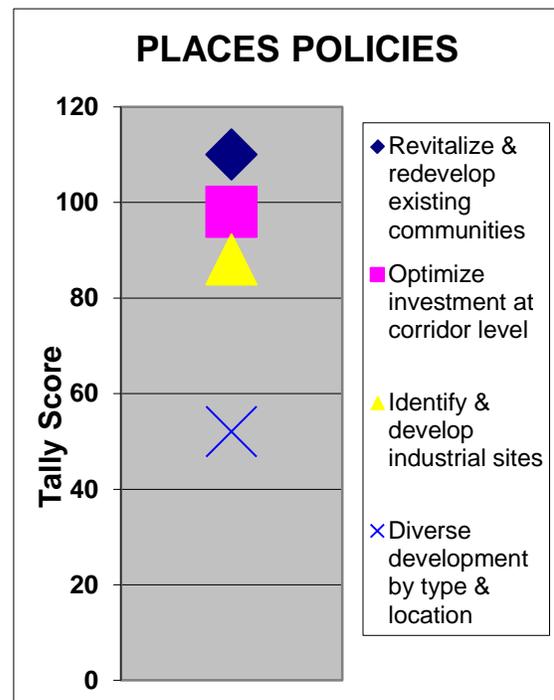


Figure 7. Values ladder exercise.

As part of its scenario planning process, SPC conducted a values ladder exercise asking stakeholders to rate their preferences on a variety of values.

Source: SPC.

¹² To learn more about the "2040 Transportation and Development Plan for Southwestern Pennsylvania," please visit: www.spcregion.org/trans_lrp.shtml.

would then ask participants to share their reactions. This extensive stakeholder process was also part of SPC's value ladder exercise in which it asked stakeholders to note their preferences on a series of values; these preferences then provided a basis for SPC's scenarios (see Figure 7).

- **Create baseline and alternative scenarios.** SPC emphasized the importance of creating the right number of baseline and alternative scenarios. Agencies should consider the number of scenarios they would like to develop, the process for refining and narrowing these scenarios, and the metrics for measuring performance. For example, three scenarios may be too few, and more than four may result in confusion about what each scenario represents. Above all, SPC stressed having supporting information available to help explain a scenario if needed.
- **Leverage academic research and findings.** SPC relied on academic literature in starting its scenario planning process. Academic research was particularly useful to SPC in determining the number of scenarios it wished to put forward.¹³ Based on this literature review, SPC decided to develop four scenarios. The research also helped SPC in defining its scenario types (e.g., center, cluster, compact, dispersed) and in identifying variables for scenarios (e.g., location of growth, density of growth, transportation system elements). This research fed into the development of SPC's "sketch" scenarios, preliminary scenarios focused on different types of development density, development mix, and transportation elements. SPC's scenario planning process worked to refine these preliminary sketches into robust scenarios.

Finding a Balanced Approach: Creating Effective Scenarios

Each peer expert also provided a presentation on strategies for developing and implementing effective scenarios.

Beth Alden, Hillsborough MPO

Ms. Alden's second presentation explained Hillsborough MPO's approach to addressing uncertainties and priorities and developing scenarios and performance measures.

Hillsborough MPO began its process by having staff conversations about uncertainties for the region. These included the possible expansion of Hillsborough County's urban service area, declining transportation funding opportunities, economic recovery, and other external factors such as demographic, technological, environmental, and financial shifts.

After identifying these uncertainties, the MPO convened an Imagine 2040 working group to help work through these issues. The working group included representatives from civic and neighborhood groups, local chambers of commerce, MPO committees, and elected officials. The group participated in a series of three visioning workshops to help develop the MPO's scenarios:

- The first workshop focused on the question **how and where will we grow?** Hillsborough MPO used audience polling to collect reactions on how and where growth should occur and what this might look like. For example, participants were asked to identify transportation choices (e.g., funding, congestion, aging infrastructure) that would most affect how and where the region grows in the future. The MPO used the answers to these questions to create its three scenarios.

¹³ SPC used research from Keith Bartholomew, Assistant Professor, College of Architecture and Planning, University of Utah, to inform its scenario-planning process, specifically Dr. Bartholomew's "Integrating Land Use Issues into Transportation Planning: Scenario Planning" (2005). The report is available at: http://faculty.arch.utah.edu/bartholomew/SP_SummaryRpt_Web.pdf.

- The second workshop addressed the **strengths and weaknesses of the scenarios**. Participants used the ‘S.W.O.T.’ method to review each scenario’s strengths, weaknesses, opportunities, and threats. For example, participants identified the strengths of the New Corporate Centers scenario as including a balance of jobs and housing with good transportation access and development opportunities; perceived weaknesses of the scenario included the potential degradation of agricultural and environmental resources and the existing burden on interstate corridors.
- In the last workshop, participants further refined the scenarios, focusing specifically on **performance measures**. For each value or theme discussed during the workshops, participants identified potential performance measures that could be used. Each statement that participants had recognized as significant was paired with a metric or measurement approach. For example, participants noted that efficient water use was a value the community wished to put forth for the future. The MPO then applied the consumption of water by typical households in single-family homes or apartments as the measure tied to this value.

Throughout Hillsborough MPO’s scenario planning process, Ms. Alden emphasized the importance of building on previous work, identifying issues, creating “stories” about land use and transportation, and developing transportation investment scenarios. These themes, echoed by Mr. Villotti, served as key takeaways from the workshop.

Lew Villotti, SPC

For his second presentation, Mr. Villotti focused on the development and implementation of SPC’s “sketch” scenarios into a final, preferred scenario.

SPC first developed a series of “sketch” scenarios, under the titles of dispersed/fringe; infill and redevelopment; compact; transit-oriented; center, cluster, and satellite; and corridor (see Figure 8). Each sketch scenario varied based on its primary development density, mix, and primary transportation elements. For example, the transit-oriented sketch scenario featured a medium-to-high development density, low-to-moderate separation of dwelling units, and a focus on public transportation and pedestrian and bicycle facilities.

With these sketch scenarios in place, SPC organized partner meetings to collect feedback. Participants voted on the sketch scenarios to arrive at four final scenarios. SPC then conducted an iterative process to narrow these four scenarios down to a single preferred scenario. SPC produced scenario maps and visualizations to demonstrate what policy and investment decisions might look like and developed accompanying indicators to show what the maps represented.

SPC presented the maps during a one-night, web-based public meeting, which was simultaneously broadcast from 11 locations. During the meeting, participants selected the scenarios they liked best. SPC used this information to develop a final preferred scenario, a hybrid of the original compact and corridor scenarios.

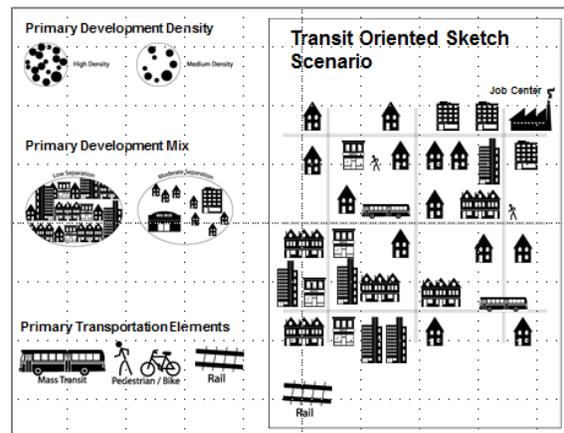


Figure 8. Sketch scenarios. SPC developed “sketch” scenarios, like the transit-oriented scenario shown here, to demonstrate differences in development density, mix, and transportation. Source: SPC.

Throughout the Project Region scenario planning initiative, SPC aimed to break down regional boundaries. Maps developed did not include county or highway boundaries or municipal names to depict the region as a whole. The final hybrid scenario also fit this thinking, focusing on existing communities and the corridors that connect them.

Since developing the preferred scenario, SPC has used it in its geospatial and policy analyses. The scenario has helped SPC think about a vision strategy to rank and evaluate transportation and development projects in the region. SPC is also coordinating with small business clients in the region as part of its economic development activities to help with implementation. SPC's scenario planning effort allowed it to integrate economic development, transportation, and land use sustainably and to guide future investments in the region.

Interactive Group Exercises

Workshop attendees participated in several group activities and discussions throughout the event. These activities included a keypad polling exercise, small group discussions on themes and challenges for the region, and a full-group exercise in which participants prioritized the themes and challenges identified.

Introductory Keypad Polling Exercise

As part of the opening exercises, Mr. Betlyon noted that scenario planning allows for the development of "stories" about land use and transportation. The theme of "stories" is one that the peers also emphasized. Scenario planning helps communities think about where they would like projected growth to occur in the region and how transportation investments can help match these preferences. To help workshop participants begin thinking about the different "stories" that scenarios could help demonstrate, Mr. Betlyon posed a series of questions and requested responses via keypad polling. The questions focused on themes and challenges as a way to help guide the group discussions that followed later during the event. The questions and responses provided by participants are noted in Appendix D: Keypad Polling Responses.

Breakout Group Discussions: Themes and Challenges for the Region

Workshop participants divided into small groups to discuss their thoughts on themes and challenges for the Richmond region. Mr. Betlyon encouraged participants to brainstorm themes, values, and challenges and to think about their preferred visions for the region's future. Participants were asked to reach consensus on three themes/values and challenges in their small groups. The full list of themes/values and challenges is available in Appendix E.

Each group reported on the themes and challenges they had selected. Mr. Betlyon then led the groups through an exercise in which they grouped similar themes or challenges together.

Compiled themes/values and challenges identified by workshop participants were:

Themes/Values

- Maintaining the City as a healthy core.
- Creating a sense of place that connects people with opportunities.
- Enhancing cultural and demographic diversity.
- Fostering economic development and stability.
- Maintaining and enhancing a strong transportation network that fosters ease of choice and enhanced mobility.
- Placing value on educational opportunities.
- Supporting environmental preservation and diversity.

Challenges

- Ability to adapt to changing needs / comfort with the status quo.
- Funding.
- Limited access to regional public transportation.
- Regional coordination / consensus.
- Political will.
- Sprawl.

Full Group Discussion: Translating Themes and Challenges into Scenarios

After grouping the similar themes/values and challenges, participants each received six colored dots to mark the three themes/values and three challenges that were of most importance to them (see Figure 9). The top three themes/values and challenges that participants identified as priorities (in order of priority) were:

Top Three Themes/Values

- Maintaining the City as a healthy core.
- Maintaining and enhancing a strong transportation network that fosters ease of choice and enhanced mobility.
- Fostering economic development and stability.

Top Three Challenges

- Regional coordination / consensus.
- Ability to adapt to changing needs / comfort with the status quo.
- Political will.



Figure 9. Potential themes and challenges for the region. Using sticky pads and colored dots, participants identified their ideas for themes and challenges.
Source: USDOT Volpe Center.

Workshop participants discussed these findings together. The peers also provided insights. Highlights from this discussion included:

- **Emphasize the City as a healthy core.** Workshop participants agreed that the theme/value of the City as a healthy core is an important one for the Richmond region. The links between the urban core and other parts of the region can also be useful in showing connections across the region.
- **Use scenarios to demonstrate value to the community.** When developing scenarios, it is often helpful to show how a particular element (e.g., environmental diversity, transportation choices) provides value. For example, a scenario could have limited transportation options as a way to help demonstrate the value that a connected transportation network might have for a region. In addition, scenarios allow stakeholders to visualize different alternatives and better understand how decisions today might affect quality of life in the future.
- **Recognize education as a “two-way” street.** Workshop participants noted that learning the “language” of other agencies and stakeholders is crucial for obtaining buy-in and implementing scenarios. Scenarios may need to be developed using terms or phrases that easily tie them to a community’s values. Planners and other transportation professionals may also wish to explore stakeholders’ viewpoints to familiarize themselves with the current context and preferences in a region.

Roundtable Discussions

The second day of the workshop provided time for in-depth, technical discussions on scenario planning topics selected by RRTPO. RRTPO staff, FHWA representatives, and the peers. These discussions focused specifically on: 1) performance measures; and 2) implementation plans and best practices. Transit performance measures and modeling were also discussed informally. These topics are discussed in greater detail below, as well as providing potential next steps for RRTPO, as suggested by workshop participants.

- **Performance Measures**
 - **Start by defining scenarios before setting goals.** The peers recommended presenting a few scenarios to begin presenting to stakeholders to collect feedback and develop targets and strategies from this outreach. The peers emphasized that setting targets first and developing scenarios later may result in scenarios that are too similar to clearly demonstrate their differences. They suggested exaggerating scenarios to a degree so that the differences among them are easily recognized.
 - **Identify performance measures early in the scenario planning process.** The peers noted that RRTPO is at an ideal stage for scenario planning, particularly as RRTPO considers using scenario planning for its next LRTP update. Having the performance metrics already identified when developing scenarios helps in later stages when discussing tradeoffs for scenarios and moving towards implementation. As MAP-21 mandates a performance-based planning approach, there may also be opportunities for RRTPO to leverage measures required under this legislation.
 - **Consider measures for which data sources will likely be available across multiple years.** When developing performance measures, RRTPO should consider the data sources and the definitions associated with these measures to ensure that they will continue to be effective in the future. As data availability may be a challenge, the peers suggested that RRTPO consider measures that will likely fit its current and long-term needs and resources.

- **Implementation Plans and Best Practices**
 - **Leverage existing scenario planning efforts in the region.** Workshop participants discussed that neighboring Fredericksburg Area MPO and Charlottesville-Albemarle MPO previously used scenario planning processes to support LRTP updates. RRTPO noted that these local efforts serve as good examples for its own scenario planning activities.
 - **Continue and enhance partnerships and collaboration.** RRTPO has strong partnerships with many stakeholders in the Richmond region, which provide a solid starting point for beginning a scenario planning approach. The Capital Region Collaborative, an existing partnership between RRPDC and the Greater Richmond Chamber, developed a framework for regional collaboration in 2012, with coordination continuing through 2013.¹⁴ Building on the Collaborative's visioning activities provides an opportunity to "acknowledge prior work," a takeaway shared by SPC.
 - **Use an incremental approach and emphasize "good planning."** Applying a step-by-step process can help encourage buy-in from elected officials and other local leaders. SPC stressed the importance of good planning to provide a context for the scenario planning effort. The final plan should be expressed as the region's "plan" or "vision," rather than solely as a transportation-specific plan for the MPO.

¹⁴ Additional information about the Capital Region Collaborative can be found at: <http://www.capitalregioncollaborative.com/>.

- **Transit Modeling Measures and Techniques**
 - ***Establish transit performance measures that focus on addressing service rather than ridership numbers.*** The peers offered that transit measures should focus more on where service is provided instead of direct ridership numbers to gain a better sense of transit performance and gaps. Ms. Alden also noted that transit LOS maps and methodologies can be useful in programming transit calculations into roadway networks. Measures used by Hillsborough MPO included total travel delay, availability of transit service, and commute length (a combination of commute distance and commute time).
 - ***Understand the context for transit modeling in the region.*** Transit modeling incorporates many components, from showing connections across a region to coding transit networks. Both SPC and Hillsborough MPO noted they perform their transit modeling at a multi-county level with multiple operators. As the modeling may cross many jurisdictions, the peers suggested that RRTPO think about how socioeconomic data can affect ridership forecasts.

- **Next Steps**
 - ***Consider scenario planning in the next LRTP update.*** As the scenario planning process may take up to two years, RRTPO plans to use this process fully in updating its 2045 LRTP, starting in 2016. RRTPO is also considering how elements of scenario planning might support its 2040 LRTP update currently in progress.
 - ***Develop a presentation highlighting RRTPO's proposed scenario planning process.*** The peers shared that one short-term next step might be for RRTPO to create a slide deck describing the anticipated scenario planning process. RRTPO could then engage its technical advisory committees, elected officials, and other local stakeholders to share this information and demonstrate the value that a scenario planning approach could bring.

III. CONCLUSION

The FHWA scenario planning workshop, hosted by RRTPO, offered an introduction to scenario planning from two expert peer agencies. Workshop participants gained a stronger understanding of the scenario planning approach and how RRTPO can potentially use this approach as part of future LRTP updates.

Through the participation of Hillsborough MPO and SPC, workshop participants received an on-the-ground look at two effective scenario planning initiatives. The workshop allowed for the exchange of ideas and insights related to scenario planning, from peer presentations and interactive discussions. Participants engaged in multiple group exercises to share their perspectives on values and challenges for the region and test the process of prioritizing and translating these values and challenges into scenarios.

Feedback, as noted on submitted evaluation forms, indicated that participants found the workshop useful and informative, and that it had strengthened their knowledge of scenario planning, and of RRTPO's LRTP update process. These opinions and the workshop discussions will help RRTPO as it moves forward in updating its current LRTP and making plans to apply a scenario planning approach to future LRTPs.

APPENDICES

Appendix A: Workshop Agenda

Day One		
Time	Topic	Speaker
8:30 am - 8:45 am	Registration and Check-in	N/A
8:45 - 9:00	Welcome and Introduction to the Workshop	Robert Crum, Executive Director, RRTPO/RRPDC Irene Rico, Administrator, FHWA Virginia Division Brian Betlyon, Metropolitan Planner, FHWA Resource Center; Workshop Facilitator
9:00 - 9:30	A Federal Perspective on Scenario Planning	Rae Keasler, Transportation Specialist, FHWA Office of Planning
9:30 - 10:00	Trends in the Region	Dan Lysy, Director of Transportation, RRTPO/RRPDC
10:00 - 10:15	Break	
10:15 - 11:30	Peer Presentation 1: Integrating Land Use and Transportation in Scenario Planning	Beth Alden, Assistant Executive Director, Hillsborough Metropolitan Planning Organization for Transportation Kirk Brethauer, Information Systems Director, Southwestern Pennsylvania Commission (SPC) Lew Villotti, Planning and Development Director, SPC
11:30 am - 12:15 pm	Group Discussion: <i>Potential Themes and Challenges for the Region</i>	Workshop Facilitator, Participants
12:15 - 1:15	Lunch	
1:15 - 2:30	Translating Themes and Challenges into Scenarios	Workshop Facilitator, Participants
2:30 - 2:45	Break	
2:45 - 3:45	Peer Presentation 2: Finding a Balanced Approach: Creating Effective Scenarios	Beth Alden, Assistant Executive Director, Hillsborough Metropolitan Planning Organization for Transportation Kirk Brethauer, Information Systems Director, SPC Lew Villotti, Planning and Development Director, SPC
3:45 - 4:30	Group Report-outs and Discussion	Workshop Facilitator, Participants
4:30 - 4:45	Next Steps	RRTPO/RRPDC Staff

Day Two		
Time	Topic	Speaker
8:15 am - 8:30 am	Registration and Check-in	N/A
8:30 - 9:00	Review of Day One	Brian Betlyon, Metropolitan Planner, FHWA Resource Center, Workshop Facilitator
9:00 - 10:00	Roundtable Discussion #1: Performance Measures	RRTPO/RRPDC Staff, Peers, FHWA and FHWA Resource Center Staff
10:00 - 10:15	Break	
10:15 - 11:15	Roundtable Discussion #2: Implementation Plans and Best Practices	RRTPO/RRPDC Staff, Peers, FHWA and FHWA Resource Center Staff
11:15 am - 12:00 pm	Wrap-up and Conclusions	RRTPO/RRPDC Staff

Appendix B: Workshop Attendees

Last Name	First Name	Agency
Alden	Beth	Hillsborough MPO for Transportation
Altman	March	Powhatan County / Technical Advisory Committee (TAC)
Aryal	Sulabh	RRPDC
Betlyon	Brian	FHWA Resource Center
Brethauer	Kirk	SPC
Britton	Nick	Virginia Department of Rail and Public Transportation / TAC
Cowles	Virginia	League of Women Voters / RRPDC Citizen Transportation Advisory Committee (CTAC)
Crum	Bob	RRPDC
Darby	Anne	RRPDC
Davis	Tammye	FHWA Virginia Division
Deemer	Rosemary	Henrico County / TAC
Fiol	Marsha	Virginia Department of Transportation, Transportation and Mobility Planning Division
Fisher	Fred	Virginia Conservation Network / CTAC
Haasch	Steven	Chesterfield County
Hill	James	City of Richmond
Jacocks	Barbara	RRPDC
Jones	Theresa	Hampton Roads Transportation Planning Organization
Keasler	Rae	FHWA Office of Planning
Lantz	Ken	RRPDC
Lee	Jin	RRPDC
Lysy	Dan	RRPDC
Martin	John	Southeastern Institute of Research
Moore	Jean	Henrico County / TAC
Moyer	John	New Kent County / CTAC
Prior	Garet	Town of Ashland / TAC
Reese	Daniel	George Washington Regional Commission / Fredericksburg Area MPO
Rhodes	Sarah	RRPDC
Riblett	Mark	Virginia Department of Transportation/TAC
Rico	Irene	FHWA Virginia Division
Ryan	Greta	RRPDC
Selleck	Randy	RRPDC
Simmelink	Joanne	Chesterfield County
Smith	Barbara	Chesterfield County / TAC
Snellings	Travis	VanGO, Inc. of Richmond / RRPDC Elderly and Disabled Advisory Committee
Stark	Jill	FHWA Office of Planning
Strauss	Rachel	USDOT Volpe Center
Villotti	Lew	SPC

Appendix C: Session Questions and Responses

Participants offered the following questions and responses during the workshop's sessions. Content shared in these questions and responses may not reflect the opinions or policies of FHWA or FTA. Responses are summarized below.

A Federal Perspective on Scenario Planning

1. *Do the investment scenarios mentioned in MAP-21 consider the expenses that local governments will have to meet in terms of transportation?*

(FHWA) Yes, the MAP-21 language refers to investment scenarios for making transportation improvements. The scenarios should be very comprehensive. Some of scenarios may arise as transportation agencies update their long-range transportation plans, particularly as the focus on performance-based planning and programming continues to grow.

Trends in the Region

2. *For the low-income population, where are we moving in 2035?*

(RRTPO) We have not made this estimate yet. We have done an estimate of the current numbers, but we have not done a forecast of where this might be. Historically, low-income populations appeared to be largely oriented along the Interstate 95 corridor. We are beginning to see poverty spreading out from the City core to the inner ring of suburbs.

Peer Presentations

Integrating Land Use and Transportation in Scenario Planning

1. *What software firm did you work with to do your polling? Any lessons learned in working with graphic design and software?*

(Alden) We looked at several different platforms and ultimately selected MetroQuest. We also hired a graphic designer to produce maps based on socioeconomic data. We did data production in-house and used a local company to produce the graphics. The graphics were then uploaded into the MetroQuest survey platform. In addition to MetroQuest, we used other software applications such as Poll Everywhere, which allows users to conduct surveys from multiple locations.

2. *With new media or survey equipment, it can sometimes be difficult to translate responses into political adoption. Did people question the validity of the responses received?*

(Alden) We always get questions like this from our elected officials about where we really reached our constituency. One of the ways we addressed this was to map the responses by zip code. We first asked respondents for their zip codes. We then compared the distribution of survey responses with the population distribution so that we could inform elected officials if we were getting responses that were typical for the county. We also coordinated extensively with environmental justice communities and with communities that had had limited participation in the past. These activities helped us build credibility for the effort.

3. *I am impressed by the amount of public involvement and outreach and the different types of feedback mechanisms that Hillsborough MPO used. What was the length of time that it took to craft the vision, hold the public involvement meetings, and develop the three "stories"?*

(Alden) I first learned about scenario planning at the [national scenario planning peer exchange](#) sponsored by FHWA, FTA, and the Transportation Research Board in summer 2012. I then talked to my planning director and local governments about using scenario planning. This conversation took about three to four months. We then hired a consultant to help us develop socioeconomic datasets and conduct several technical workshops to create trend scenarios. This took another six months. During this time, we got a sense of what the scenarios would be like and how we would illustrate them to the public. The graphics production part took about three to four months after that. We launched our outreach and website in August 2013. The outreach lasted approximately three months, and then we began work on the vision. We started working on performance metrics by January 2014. We did our outreach for part two of our scenario planning effort in July and August 2014.

4. *Regarding the respondents, did you look at generational differences? Also, what is the status of the referendum?*

(Alden) We did not ask for extensive demographic information. We asked if respondents worked at home, outside the home, or if they were students or retirees; we thought that this question might impact transportation priorities. The responses showed a slight over-representation for working outside the home. Our respondents were more likely to say that transportation was a problem for them, which was also based on the statistically significant poll research that was done separately. If you have the resources to do this type of statistically significant poll, it can be a good point of comparison. We also found that people may self-select for an activity like completing this survey.

Regarding the referendum, we had one in 2010 that did not pass. The State will hold events over the next six months to determine if a referendum should be put on a future ballot.

5. *I am interested in the points you made about Hillsborough MPO's investment program and performance measures. How did you determine budgets? Do they reflect various levels of investments?*

(Alden) We looked at our major arterials for crash data. We developed two types of typical treatment and a typical per-mile cost. We then worked with a consulting firm to forecast the anticipated impacts on our crash rate if we made different types of investments (e.g., medians, crosswalks) on a certain number of miles. All of the technical work that was done is documented in our technical memos.

6. *How did you do outreach? What venues did you use?*

(Villotti) SPC had an extensive public outreach effort. We also tried to leverage the resources we had. One of the activities we held was a town hall meeting that we conducted virtually across 11 locations in a single night; about 600 to 700 people logged in that night to be part of this effort. We also created a kiosk and created a touch-screen monitor based off of an Access database that stakeholders could use to submit their preferences. In addition, SPC staff presented frequently at local community meetings. "Wherever two or more meet" was oftentimes our motto. At the end of our scenario planning process, we had agencies asking if they could be involved and attend our meetings with partners.

(Brethauer) We also tried to get on stakeholders' meeting agendas in advance. We would share information about our scenario planning effort during these meetings. As we moved forward in the process, agencies began asking us to share updates and participate in these meetings.

(Villotti) Much of the scenario planning technology in place today was not around when we were going through our scenario planning effort in the mid 2000's. It took us 26 months for our scenario planning process, but today, it would likely be much shorter based, in part, because of all of the updated and new tools available.

7. *How did you “draw the line” when determining which prior plans and work to use and reference?*

(Villotti) Land use law is subject to the municipality in Pennsylvania. We used county comprehensive plans as a starting point for our review. We also looked at the State's [Keystone Principles and Criteria for Growth, Investment, and Resource Conservation](#).

8. *One key factor in all of this is the cost of gas. Did this impact your model?*

(Villotti) We were in a “maintenance first/only” philosophy. When we adopted our plan, 97 percent of the funds in the plan were for maintenance projects.

(Alden) In late 2012/early 2013, when we were having our stakeholder discussions, the cost of gas was high. At these meetings, we discussed the implications of higher gas prices. This was one of the uncertainties that we rolled into our compact growth scenario.

Finding a Balanced Approach: Creating Effective Scenarios

1. *Could you talk about the cost to expand infrastructure in Hillsborough County?*

(Alden) We have an impact fee in Hillsborough County, which is calculated based on the location of the development. A development that is farther out is estimated to have a longer average trip length and will therefore have a higher cost based on lower density and dispersal from the center of the county. We took this impact fee methodology and calculated the potential impact fees and costs for each scenario. This method was not perfect, but it helped us show the higher cost of infrastructure. I am also aware of communities in other parts of the country that estimated the cost of alternative transportation networks. We did a proxy calculation instead as part of our initial phase.

2. *Did your findings show consistency or contradictions with the comprehensive plans and LRTP?*

(Alden) We felt like we were validating what we had thought in the past. There was a lot of support for maintaining the urban service area boundary where it is; this topic has been controversial over the past 10 years. We also found support for investing in walkable communities and having more choices in terms of transportation offerings. In general, we felt that, through this exercise, we were mostly in tune with community sentiment.

3. *Does Hillsborough MPO have a travel demand model developed and used in-house?*

(Alden) Yes, it is in-house. The model is owned and operated by the Florida Department of Transportation, in close coordination with all of the State's MPOs. We ran a copy of this model for our scenarios.

4. *If you went through this process again, would you do it the same?*

(Alden) Yes, I thought it was a successful process. It was helpful to have stakeholders involved throughout the process. We called on stakeholders to take Imagine 2040 to their

civic groups and chambers and feature in websites and newsletters. This helped in terms of getting a lot of responses.

5. *There are a lot of scenario planning devices and processes. It seems like one challenge might be getting elected officials to participate in these scenario planning activities and events. Any insights?*

(Alden) We have elected officials on our MPO board. We made regular reports to them and also provided one-on-one briefings.

6. *When it comes to modeling and scenario planning, there may sometimes be trepidation, particularly if there are questions about the model. Do you have any suggestions to help make the case?*

(Villotti) We specifically did not use numbers for our measures for this reason. We used directional targets instead to show the general direction we wanted to go. We discussed it is "how," not "how much." A lot of it might be how you present the information. You need to think about how you can convey this information effectively.

Appendix D: Keypad Polling Responses

In advance of the breakout discussions on potential themes and challenges for the Richmond region, participants were asked a series of questions to which they responded using keypad polling technology. The questions asked and responses provided are listed below.

1. *Scenario planning may include examining transportation system improvements in the context of:*
 - a. Housing (0 percent)
 - b. Land Use (3 percent)
 - c. Environment (0 percent)
 - d. Energy Use (0 percent)
 - e. All of the above (97 percent)

Number of Responses: 34

2. *What demographic changes will most affect how and where we will grow?*
 - a. Aging (26 percent)
 - b. Race / Diversity (13 percent)
 - c. Single persons (5 percent)
 - d. Single parents (2 percent)
 - e. Immigration (8 percent)
 - f. Generational Desires (37 percent)
 - g. Other (10 percent)

Number of Responses: 34

3. *The greatest challenge facing the Richmond region is:*
 - a. Leadership (57 percent)
 - b. Transportation (13 percent)
 - c. Land Use (7 percent)
 - d. Demographics (0 percent)
 - e. Financial / Economic Stability (20 percent)
 - f. Environmental (3 percent)
 - g. Other (0 percent)

Number of Responses: 30

4. *What transportation challenges will most affect how and where we will grow?*
 - a. Transit Choices (16 percent)
 - b. Bike / Ped Options (7 percent)
 - c. Congestion (12 percent)
 - d. Aging Infrastructure (18 percent)
 - e. Funding (44 percent)
 - f. Freight Movement (0 percent)
 - g. Other (3 percent)

Number of Responses: 35

Appendix E: Themes and Challenges in the Region Responses

During the workshop, participants worked in small groups to identify themes/values and challenges that they felt were important to consider for the region. Each group was asked to brainstorm and then to select their top three preferences for both themes/values and challenges. The groups later participated in an exercise in which they compiled similar themes/values and challenges. The full list of themes/values and challenges as developed by participants is noted below.

Themes / Values

- City as a healthy core;
- Highly educated population;
- Quality education;
- Environmental diversity;
- Maintain strong transportation network;
- Transportation choices;
- Ease and choice of mobility;
- Safety;
- Economic development;
- Economic stability and opportunities;
- Sense of place with connected opportunities;
- Culturally diverse; and
- Demographic diversity.

Challenges

- Regional consensus;
- Lack of shared regional vision (me vs. us);
- No incentive for regionalism;
- Education (of public and elected officials about planning issues) and communication;
- Funding;
- Sprawl;
- Ability to adapt to changing needs;
- Comfort with the status quo;
- Coordinated workforce focus and training;
- Limited access to regional public transportation;
- Disconnect between planning arc and political arc; and
- Political will / public apathy.