Extending the Mon-Fayette Expressway and Busway East (E/BEE):

Reducing Traffic Congestion, Enhancing Economic Vitality, Improving Public Safety, and Accommodating Desirable Development in the Mon Valley in the Pittsburgh Area

A report on the potential impact of the completion of the Mon-Fayette Expressway and the extension of the Busway East in the Pittsburgh area

August 2016

TRIP
a national transportation research group
202-466-6706
www.tripnet.org

Founded in 1971, TRIP ® of Washington, DC, is a nonprofit organization that researches, evaluates and distributes economic and technical data on surface transportation issues. TRIP is sponsored by insurance companies, equipment manufacturers, distributors and suppliers; businesses involved in highway and transit engineering and construction; labor unions; and organizations concerned with efficient and safe surface transportation.

Executive Summary

Improving the efficiency of a region's transportation system by expanding the capacity of highways, transit and intermodal facilities has been found to be an effective way to enhance economic development opportunities and improve quality of life.

- This report looks at the impact of the proposed 13-mile extension of the Mon-Fayette Expressway from PA-Route 51 to I-376 in Monroeville as proposed by the Pennsylvania Turnpike Commission.

- This report also looks at the benefit of the extension of the Martin Luther King Jr. Busway East by 2.8 miles from its current terminus in Swissvale to the extended Expressway in East Pittsburgh as a separate project.

- The proposed busway extension would include a park-and-ride lot at the Busway's junction with the Expressway. The proposed busway extension would be a separate project of the Port Authority of Allegheny County (PAT). PAT is currently undertaking a feasibility study of the busway extension.

The key findings of the report include:

The proposed extension of the Mon-Fayette Expressway and the extension of Busway East (E/BEE) will play a critical role in enhancing economic development opportunities in the Mon Valley by improving transportation access in the region.

- The E/BEE would extend the Mon-Fayette Expressway 13 miles from PA-Route 51 to I-376 in Monroeville and extend the Martin Luther King Jr., Busway East 2.8 miles from its current terminus in Swissvale to the extended Expressway in East Pittsburgh.

- The Expressway proposal replaces an earlier proposal that included the Expressway expansion to Monroeville and a second additional Expressway spur heading west into central Pittsburgh.

- The Federal Highway Administration is currently conducting a re-evaluation of the new Expressway proposal.

- The expanded portion of the Expressway would be a tolled highway, administered by the Pennsylvania Turnpike Commission, which also administers the existing portion of the Mon-Valley Expressway.

- The estimated cost of the Expressway is approximately $1.7 billion.

- The estimated cost of the Busway East is approximately $100 million.

The benefits of the Expressway completion include:

- The improvement of access and mobility in the economically distressed Mon Valley area, including industrial brownfield sites in Duquesne, McKeesport and Keystone Commons in East Pittsburgh. This would result in increased economic development opportunities along the corridor.

  The completion of the entire Mon Valley Expressway system from I-68 in West Virginia to I-376 in Monroeville

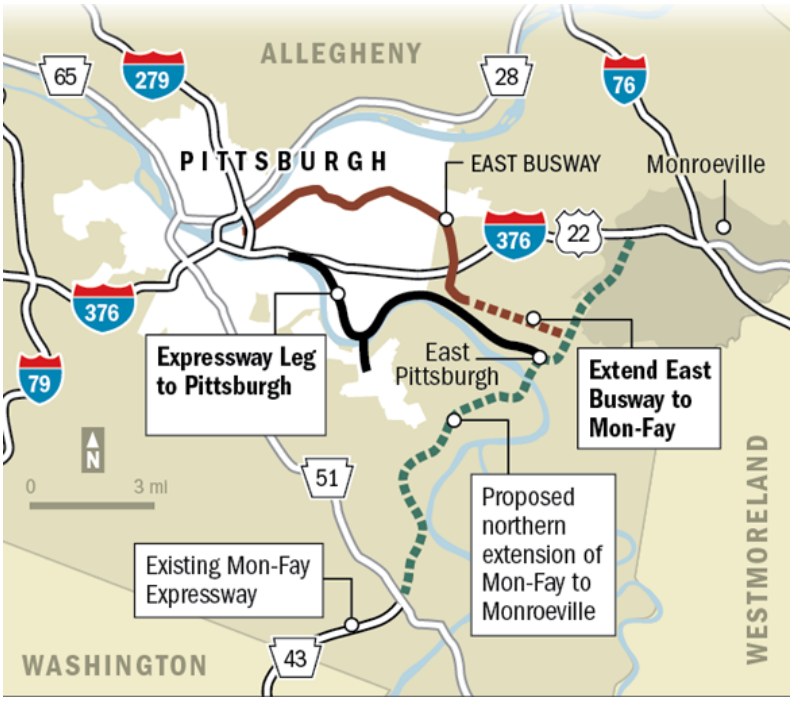
The benefits of the Busway East extension include:

- The improvement of mobility between East Pittsburgh and Oakland

- Improved transit access from the proposed Expressway project north of PA Route 51 as well as completed sections south of PA Route 51.

- Significantly enhanced transit access for the Monroeville, East Pittsburgh and Duquesne areas and communities located along the Expressway and busway extension.

- Some traffic congestion relief on the Parkway East.



- Construction of the Mon-Fayette Expressway or construction of the combined Expressway and Busway (E/BEE) will significantly reduce travel time in key travel corridors in East Pittsburgh.

- The following chart indicates one-way travel times between key destinations in East Pittsburgh using the current transportation system, estimated one-way travel times with completion of either the Expressway extension or the combined Expressway/Busway extension (E/BEE) and reductions of one-way travel times as a result of improved transportation in the region:

Travel time improvements with Mon-Fayette Expressway Extension (in minutes)

From/To	Current	With Extension	Time Savings
Monroeville Convention Center / East Pittsburgh	20	7	13
East Pittsburgh / Duquesne	17	3	14
Duquesne / Monroeville Convention Center	30	10	20

Travel time improvements with E/BEE (in minutes)

From/To	Current	With Extension	Time Savings
East Pittsburgh / Pittsburgh	30	20	10
Duquesne / Pittsburgh	30	20	10

- The selection of travel destinations is based on access of major Mon Valley economic assets to Monroeville. The City of Duquesne is the location of City Center Industrial Park and Keystone Commons is located in East Pittsburgh. The travel distance from Duquesne to Monroeville on existing roads is nine miles; from East Pittsburgh to Monroeville is four miles; and from East Pittsburgh to Duquesne is six miles. Existing roads include multiple traffic lights and two lane roads over and around hilly terrain that can compromise travel safety, particularly in winter months.

- Traffic congestion in the Pittsburgh urban area causes 45 million hours of delay annually -- an average of 39 hours per commuter -- at an annual cost of approximately $1 billion in the value of lost time and wasted fuel.

Completion of the Mon-Fayette Expressway and the extension of the Busway East (E/BEE) would stimulate the development of underutilized property in the Mon Valley region and significantly improve mobility and connectivity in the Mon Valley and surrounding areas, improving access to jobs for the area's residents.

- The Expressway would improve access for the 1,500 current manufacturing and related firms in the Mon Valley that employ approximately 22,000 people and help to retain and grow these companies.

- The Expressway would provide direct access to 1,000 acres of brownfield redevelopment sites including Duquesne City Center and Keystone Commons.

- The Expressway extension would serve as the crucial eastern leg of the Southern Beltway system.

- The Expressway would promote just-in-time production and shipping. In a survey of Mon Valley firms, 71 percent of the respondents said they would use the Expressway.

- The Expressway would increase employment by existing firms. Twenty-five percent of Mon Valley firms surveyed said they would hire additional employees if the Expressway was completed.

- The Expressway would improve access for intermodal commerce at facilities such as the Norfolk Southern Pitcairn Intermodal Terminal.

- The E/BEE would promote community redevelopment in Mon Valley communities including infill development and transit-oriented development.

- Good highway access is critical for manufacturers or companies reliant on goods distribution. Of the $1.1 trillion of goods shipped annually from and to sites in Pennsylvania, 79 percent were transported by truck and 14 percent were shipped by multiple modes, including trucks.

The completion of the Mon-Fayette Expressway and the extension of the Busway East (E/BEE) would create numerous jobs during the estimated four-year construction phase as well as numerous long-term jobs created as a result of both projects.

- Based on the most recent estimate of the employment impacts of highway and transit investment generated by the Council of Economic Advisors (CEA) with the Executive Office of the President, TRIP estimates that the construction of the Expressway and Busway Extension (E/BEE) would support approximately 5,850 jobs annually in the construction and related sectors over a four-year period.

- The following chart provides employment estimates during the four-year construction period anticipated for completing the Expressway and Busway extensions.

	Total Construction Cost	Annual Jobs Created (Over 4-Year Period)
Construction of Mon-Fayette Expressway Extension	$1.7 Billion	5,525
Construction of Busway East Extension	$100 Million	325
Construction of E/BEE	$1.8 Billion	5,850

- Based on the Transportation Research Board's extensive analysis of the impact of improved transportation access on employment, TRIP estimates that the completion of the E/BEE would result in the creation of approximately 20,880 long-term jobs: including 12,960 long-term jobs along the E/BEE corridor and approximately 7,920 jobs outside of the E/BEE corridor.

- The following chart provides estimates of long-term jobs created by the completion of the E/BEE:

	Long-Term Jobs Created in Corridor	Long-Term Jobs Created Outside Corridor	Total Long-Term Jobs Created
Construction of Mon-Fayette Expressway Extension	12,240	7,480	19,720
Construction of Busway East Extension	720	440	1,160
Construction of E/BEE	12,960	7,920	20,880

The need for the Mon-Fayette Expressway was born of the historic and unprecedented economic challenges encountered by the Mon River corridor.

- Fifty years ago, the Mon Valley suffered the shutdown of the US Steel Donora Works, the first integrated steel mill in the United States to close. In the mid-1980s, the entire corridor saw the near-collapse of basic manufacturing.

- While there has been significant economic progress in Pittsburgh and southwestern Pennsylvania, the ramifications of the economic losses in the 1960s and 1980s still reverberate in the Mon Valley.

- The improved access provided by the E/BEE will be crucial to the redevelopment of Mon Valley communities and will attract and promote economic development in the region.

According to a 2012 national report, "Interactions Between Transportation Capacity, Economic Systems and Land Use," **prepared by the Strategic Highway Research Program for the Transportation Research Board, improved access as a result of highway and transit capacity expansions provides numerous regional economic benefits. Those benefits include higher employment rates, higher land value, additional tax revenue, increased intensity of economic activity, increased land prices, and additional construction as a result of the intensified use.**

- The report, reviewed 100 projects, costing a minimum of $10 million, which expanded transportation capacity either to relieve congestion or enhance access.

- The projects analyzed in the report were completed no later than 2005 and included a wide variety of urban and rural projects, including the expansion or addition of major highways, beltways, connectors, bypasses, bridges, interchanges, industrial access roads, intermodal freight terminals and intermodal passenger terminals.

- The expanded capacity provided by the projects resulted in improved access, which resulted in reduced travel-related costs, faster and more reliable travel, greater travel speeds, improved reliability, and increased travel volume.

- The report found that improved transportation access benefits a region by: enhancing the desirability of an area for living, working or recreating, thus increasing its land value; increasing building construction in a region due to increased desirability for homes and businesses; increasing employment as a result of increased private and commercial land use; and, increasing tax revenue as a result of increased property taxes, increased employment and increased consumption, which increases sales tax collection.

- The report found that benefits of a transportation capacity expansion unfolded over several years and that the extent of the benefits were impacted by other factors including: the presence of complementary infrastructure such as water, sewer and telecommunications; local land use policy; the local economic and business climate; and, whether the expanded capacity was integrated with other public investment and development efforts.

- For every $1 million spent on urban highway or intermodal expansion, the report estimated that an average of 7.2 local, long-term jobs were created at nearby locations as a result of improved access. An additional 4.4 jobs were created outside the local area, including businesses that supplied local businesses or otherwise benefited from the increased regional economic activity.

- The report found that highway and intermodal capacity projects in urban areas created a greater number of long-term jobs than in rural areas, largely due to the more robust economic environment and greater density in urban communities.

The efficiency of a region's transportation system, particularly its highways, is critical to the state's economy. Businesses are increasingly reliant on an efficient and reliable transportation system to move products and services. A key component in business efficiency and success is the level and ease of access to customers, markets, materials and workers.

- Businesses have responded to improved communications and greater competition by moving from a push-style distribution system, which relies on low-cost movement of bulk commodities and large-scale warehousing, to a pull-style distribution system, which relies on smaller, more strategic and time-sensitive movement of goods.

- Increasingly, companies are looking at the quality of a region's transportation system when deciding where to re-locate or expand. Regions with congested or poorly maintained roads may see businesses relocate to areas with a smoother, more efficient and more modern transportation system.

- Highway accessibility was ranked the number two site selection factor behind only the availability of skilled labor in a 2015 survey of corporate executives by Area Development Magazine.

- The Federal Highway Administration estimates that each dollar spent on road, highway and bridge improvements results in an average benefit of $5.20 in the form of reduced vehicle maintenance costs, reduced delays, reduced fuel consumption, improved safety, reduced road and bridge maintenance costs and reduced emissions as a result of improved traffic flow.

Introduction

A region's surface transportation system – its freeways, roads, bridges and transit systems -- plays a critical role in providing and maintaining a community's quality of life. Together these elements of a regional transportation system allow business to operate and people to pursue numerous activities including getting to and from work, attending school, shopping, going to sports events and visiting friends. To meet a community's mobility needs, it is essential that the local transportation system provide adequate personal and commercial mobility and access, while enhancing public safety.

This report looks at the impact of the proposed extension of the Mon-Fayette Expressway proposed by the PA Turnpike Commission and the extension of the Busway East to connect to the extended Expressway (E/BEE). While documenting the benefits of the Expressway extension as a separate project, the report will also explore the added value of extending the Martin Luther King Jr. Busway to a proposed Expressway interchange in east Pittsburgh. The report also looks at the challenges faced in the Mon Valley region and the anticipated benefits of completion of the E/BEE as well as the impact of traffic congestion in the Pittsburgh area.

The Mon-Fayette Expressway Project

The proposed extension of the Mon-Fayette Expressway will play a critical role in relieving regional traffic congestion and improving transportation reliability for motorists and commercial trucks in the area's congested east-west corridor.

Traffic congestion is a significant burden in the Pittsburgh urban area, causing 45 million hours of delay annually -- an average of 39 hours per commuter -- at an annual cost of approximately $1 billion in the form of lost time and wasted fuel.[1] A lack of adequate transportation access in the Mon Valley area also reduces the potential for the region's economic growth.

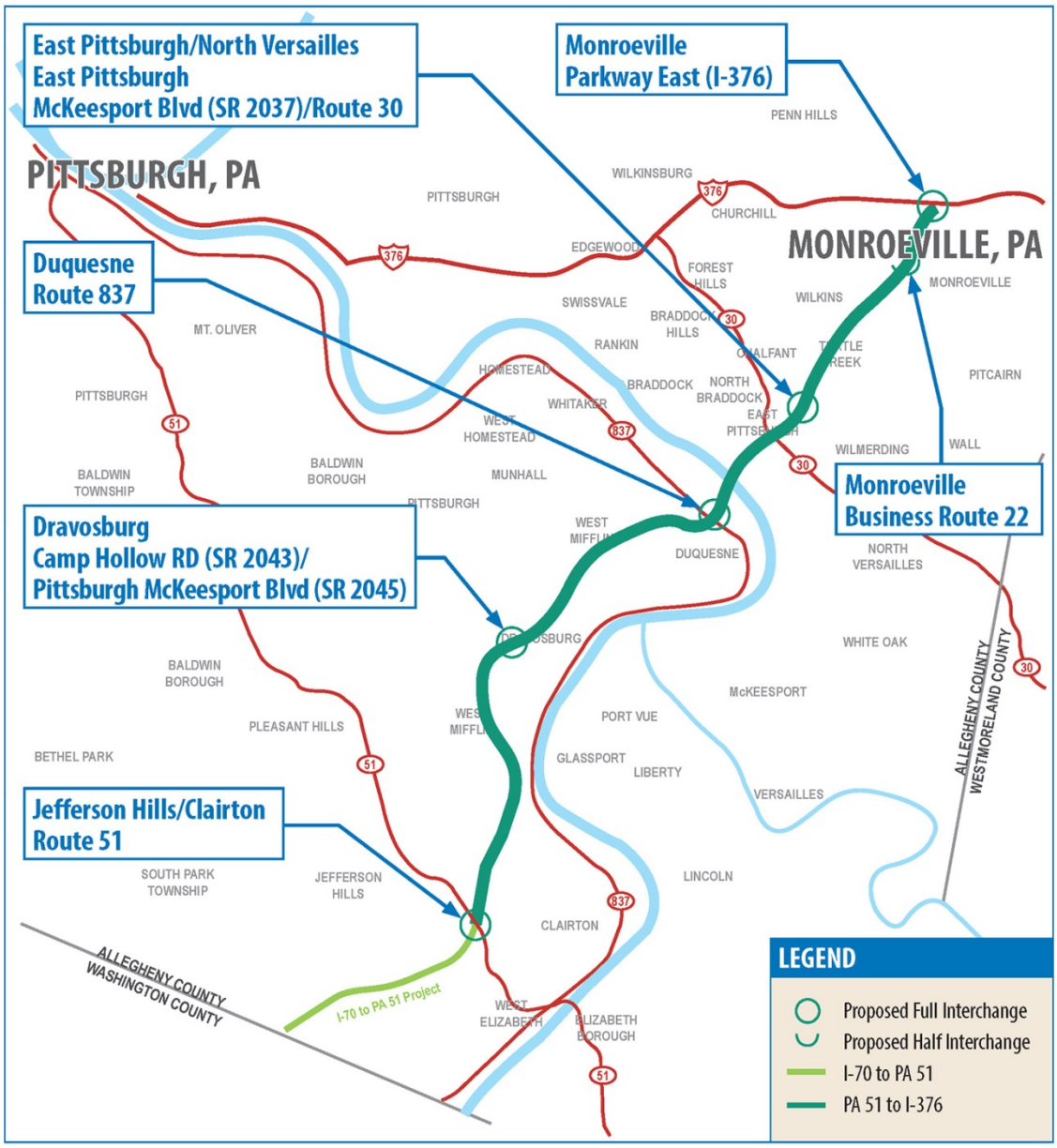
The proposed E/BEE would extend the Mon-Fayette Expressway 13 miles from PA-Route 51 to I-376 in Monroeville and extend the Martin Luther King Jr. Busway East by 2.8 miles from its current terminus in Swissvale to the extended Expressway in East Pittsburgh.[2]

The E/BEE proposal replaces an earlier proposal that included the currently proposed Expressway expansion to Monroeville and a second additional Expressway spur heading west into central Pittsburgh, but did not include an expansion of the Busway to connect with the Expressway. The estimated cost of the E/BEE is approximately $1.8 billion.

The expanded portion of the Expressway would be a tolled highway, administered by the Pennsylvania Turnpike Commission, which also administers the existing portion of the Mon-Valley Expressway.

The Expressway extension would increase access and mobility in the economically distressed Mon Valley area, including industrial brownfield sites in Duquesne, McKeesport and Keystone Commons in East Pittsburgh, resulting in increased economic development opportunities in the corridor.

Chart 1. The Proposed Mon-Fayette Expressway Extension



Source: Pennsylvania Turnpike Commission

Construction of the Mon-Fayette Expressway or construction of the combined Expressway and Busway (E/BEE) would significantly reduce travel time in key travel corridors in East Pittsburgh.

The following chart indicates one-way travel times between key destinations in East Pittsburgh using the current transportation system, estimated one-way travel times with completion of either the Expressway extension or the combined Expressway/Busway extension (E/BEE) and reductions on one-way travel as a result of improved transportation in the region:

Chart 2. Travel Time Improvements as a Result of Completion of the Mon-Fayette Expressway and Busway East Extension (in minutes)

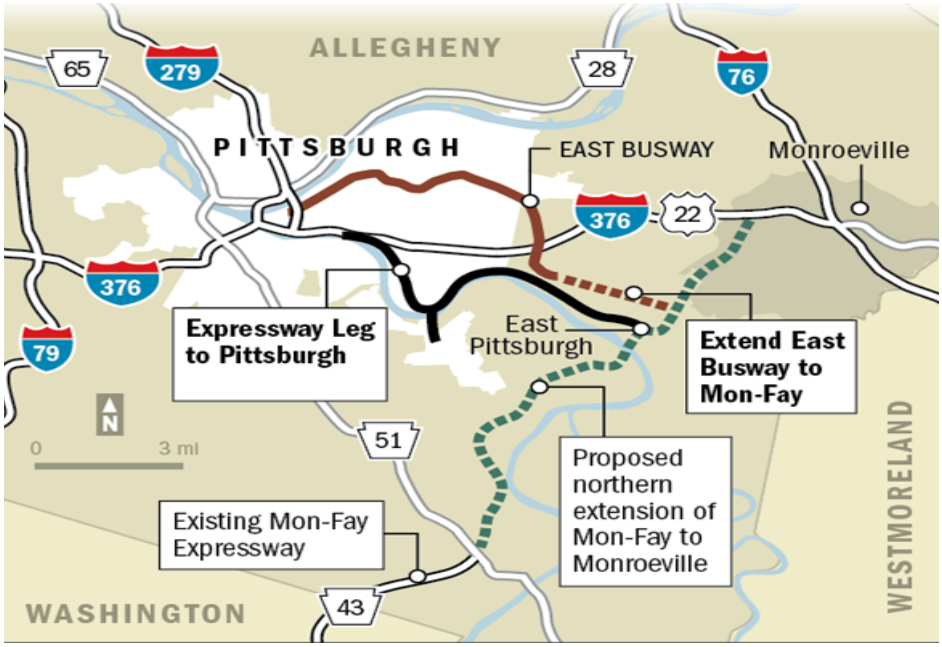
Travel time improvements with Mon-Fayette Expressway Extension (in minutes)			
From/To	Current	With Extension	Time Savings
Monroeville Convention Center / East Pittsburgh	20	7	13
East Pittsburgh / Duquesne	17	3	14
Duquesne / Monroeville Convention Center	30	10	20
Travel time improvements with E/BEE (in minutes)			
From/To	Current	With Extension	Time Savings
East Pittsburgh / Pittsburgh	30	20	10
Duquesne / Pittsburgh	30	20	10

Source: TRIP analysis of Mon Valley Alliance estimates

The selection of travel destinations is based on access of major Mon Valley economic assets to Monroeville. The City of Duquesne is the location of City Center Industrial Park and Keystone Commons is located in East Pittsburgh. The travel distance from Duquesne to Monroeville on existing roads is nine miles; from East Pittsburgh to Monroeville is four miles; and from East Pittsburgh to Duquesne is six miles. Existing roads include multiple traffic lights and two lane roads over and around hilly terrain that can compromise travel safety, particularly in winter months.

The Expressway extension would also complete the entire Mon Valley Expressway system from I-68 in West Virginia to I-376 in Monroeville. The E/BEE would also include a park-and-ride lot at the Busway's junction with the Expressway, improving public transit access in East Pittsburgh.

Chart 3. The Proposed Mon-Fayette Expressway/Busway East Extension (E/BEE)



Source: Construction Legislative Council

The Economic Benefits of the Expressway and Busway Extension

The completion of the Mon-Valley Expressway and the possible extension of the Busway East would stimulate the development of underutilized property in the Mon Valley region, creating more local jobs. The extensions will also significantly improve mobility and connectivity in the Mon Valley and surrounding areas, improving access to jobs for the area's residents.

The need for the Mon-Fayette Expressway was born of the historic and unprecedented economic challenges encountered in the Mon River corridor. Fifty years ago, the mid-Mon Valley suffered the shutdown of the US Steel Donora Works, the first integrated steel mill in the United States to close. And, by the mid-1980s, the entire corridor saw a near-collapse of basic manufacturing.

While there has been significant economic progress in Pittsburgh and southwestern Pennsylvania, the ramifications of a significant loss of steel and other manufacturing industries from the 1960s through the 1980s caused significant economic hardship in the Mon Valley from which the region has not fully recovered.

The Expressway and Busway extensions would improve access for the 1,500 current manufacturing and related firms in the Mon Valley that employ approximately 22,000 people and help to retain and grow these companies.[3]

The Expressway extension would also provide direct access to 1,000 acres of brownfield redevelopment sites in the region, including Duquesne City Center and Keystone Commons.[4]

The Expressway extension would also serve as the crucial eastern leg of the Southern Beltway system. The Expressway extension would promote just-in-time production and shipping and increase employment by existing firms. A survey of Mon Valley firms found that 71 percent of the firms would use the Expressway.[5] Twenty-five percent of Mon Valley firms surveyed said they would hire additional employees if the Mon-Valley Expressway was completed.[6].

The E/BEE would also improve access for intermodal commerce at facilities such as the Norfolk Southern Pitcairn Intermodal Terminal and promote community

redevelopment in Mon Valley communities including infill development and transit-oriented development.

Based on the most recent estimate of the employment impacts of highway and transit investment generated by the Council of Economic Advisors (CEA) with the Executive Office of the President, TRIP estimates that the construction of the Expressway and Busway Extension (E/BEE) would support approximately 5,850 jobs annually in the construction and related sectors over a four-year period.[7]

The following chart provides employment estimates during the four-year construction period anticipated for completing the Expressway and Busway extensions:

Chart 4. The Impact of the Mon-Fayette Expressway/Busway East Extension (E/BEE) on Short-term employment.

	Total Construction Cost	Annual Jobs Created (Over 4-Year Period)
Construction of Mon-Fayette Expressway Extension	$1.7 Billion	5,525
Construction of Busway East Extension	$100 Million	325
Construction of E/BEE	$1.8 Billion	5,850

Source: TRIP Estimate Based Council of Economic Advisers Employment Estimates

Based on the Transportation Research Board's extensive analysis of the impact of improved transportation access on employment, TRIP estimates that the completion of the E/BEE would result in the creation of approximately 20,880 long-term jobs: including 12,960 long-term jobs along the E/BEE corridor and approximately 7,920 jobs outside of the E/BEE corridors.[8]

The following chart provides estimates of long-term jobs created by the completion of the E/BEE:

Chart 5. The Impact of the Mon-Fayette Expressway/Busway East Extensions (E/BEE) on Long-term employment.

	Long-Term Jobs Created in Corridor	Long-Term Jobs Created Outside Corridor	Total Long-Term Jobs Created
Construction of Mon-Fayette Expressway Extension	12,240	7,480	19,720
Construction of Busway East Extension	720	440	1,160
Construction of E/BEE	12,960	7,920	20,880

Source: TRIP Estimate Based Council of Economic Advisers Employment Estimates

Good highway access is critical for manufacturers or companies reliant on goods distribution. Of the $1.1 trillion of goods shipped annually from and to sites in Pennsylvania, 79 percent were transported by truck and 14 percent were shipped by multiple modes, including trucks.[9]

Importance of Transportation to Economic Growth

Today's culture of business demands that an area have well-maintained and efficient roads, highways and bridges if it is to remain economically competitive. Global communications and the impact of free trade in North America and elsewhere have resulted in a significant increase in freight movement, making the quality of a region's transportation system a key component in a business's ability to compete locally, nationally and internationally.

Businesses have responded to improved communications and the need to cut costs with a variety of innovations including just-in-time delivery, increased small package delivery, demand-side inventory management and e-commerce. The result of these changes has been a significant improvement in logistics efficiency as firms move from a

push-style distribution system, which relies on large-scale warehousing of materials, to a pull-style distribution system, which relies on smaller, more strategic movement of goods. These improvements have made mobile inventories the norm, resulting in the nation's trucks literally becoming rolling warehouses.

Highways are vitally important to continued economic development in the Pittsburgh area. As the economy expands, creating more jobs and increasing consumer confidence, the demand for consumer and business products grows. In turn, manufacturers ship greater quantities of goods to market to meet this demand, a process that adds to truck traffic on a region's highways and major arterial roads.

Local, regional and state economic performance is improved when a region's surface transportation system is expanded or repaired. This improvement comes as a result of the initial job creation and increased employment created over the long-term because of improved access, reduced transport costs and improved safety. Highway accessibility was ranked the number two site selection factor behind only the availability of skilled labor in a 2015 survey of corporate executives by Area Development Magazine.[10]

The cost of road and bridge improvements is more than offset by the reduction of user costs associated with driving on rough roads, the improvement in business productivity, the reduction in delays and the improvement in traffic safety. The Federal Highway Administration estimates that each dollar spent on road, highway and bridge improvements results in an average benefit of $5.20 in the form of reduced vehicle maintenance costs, reduced delays, reduced fuel consumption, improved safety, reduced

road and bridge maintenance costs and reduced emissions as a result of improved traffic flow.[11]

Study on Impact of U.S. Highway Capacity Additions

A national report that studied the economic results of 100 highway capacity expansion projects provides significant new insights into how enhancing regional mobility provides long-term economic benefits. The 2012 report, "Interactions Between Transportation Capacity, Economic Systems and Land Use," was prepared by the Strategic Highway Research Program for the Transportation Research Board, which is a program of the National Academy of Sciences. The report reviewed 100 projects, costing a minimum of $10 million and completed no later than 2005, which expanded transportation capacity either to relieve congestion or enhance access.

The projects were carefully selected to ensure a wide range of project types and land use settings and included a wide variety of urban and rural projects, including the provision or expansion of intercity highways, local access roads, interchanges, bridges, bypasses and intermodal facilities. The projects reviewed expanded or added major highways, beltways, connectors, bypasses, bridges, interchanges, industrial access roads, intermodal freight terminals, and intermodal passenger terminals. The expanded capacity provided by the projects resulted in improved access, which resulted in reduced travel-related costs, faster and more reliable travel, greater travel speeds, improved reliability and increased travel volume.

The report found that improved transportation access as a result of capacity expansion benefits a region by: enhancing the desirability of an area for living, working or recreating, thus increasing its land value; increasing building construction in a region due to increased desirability for homes and businesses; increasing employment as a result of increased private and commercial land use; and, increasing tax revenue as a result of increased property taxes, increased employment and increased consumption, which increases sales tax collection.[12]

According to the report, "transportation projects lead to multifaceted forms of economic development impact, which may include effects on employment, income, land use, property values or business construction."[13]

The benefits of a transportation capacity expansion unfolded over several years and the extent of the benefits was impacted by other factors, including: the presence of complimentary infrastructure such as water, sewer and telecommunications; local land use policy; the local economic and business climate; and, whether the expanded capacity was integrated with other public investment and development efforts. "In some cases, an area with a higher growth trend may tend to be better positioned to take advantage of new highway connections or capacity," the report found.[14]

The report provided estimates on the average number of long-term jobs created as a result of increased transportation capacity, both within the local area and outside of the immediate area of the improved access. For every $1 million spent on increased transportation capacity, the report estimated that an average of seven local, long-term jobs were created at nearby locations as a result of improved access. An additional 4.2

jobs outside the local area were created, including businesses that supplied local businesses or otherwise benefited from the increased regional economic activity.[15]

Highway and other intermodal capacity projects in urban areas created a greater number of long-term jobs than in rural areas, largely due to the more robust economic environment and greater density in urban communities.[16] Every $1 million spent on urban highway or intermodal expansion projects was found to result in an additional 7.2 local long-term jobs and an additional 4.4 non-local, long-term jobs, while every $1 million spent on rural highway or intermodal expansion projects was found to result in an additional 2.9 local, long-term jobs and an additional 1.6 non-local, long-term jobs.[17]

Conclusion

Enhancing the quality of life in the economically distressed Mon Valley area remains a critical goal in Southwestern Pennsylvania. A region that improves the efficiency of its transportation system benefits from a significant improvement in regional economic competitiveness, which results in increased employment, higher land value and related economic benefits.

The proposed extension of the Mon-Fayette Expressway and the Martin Luther King Jr., Busway East in East Pittsburgh has the potential to transform the economy of the Mon Valley region by significantly improving transportation access in the economically distressed area. These improvements in the region's transportation network will enhance the efficiency of local businesses, which will result in a significant expansion in employment and attract new development to brownfield sites in the region.

Moving forward with the E/BEE will be a critical step in completing the economic and social recovery of the Mon Valley region.

###

Endnotes

[1] Texas Transportation Institute (2016). 2015 Urban Mobility Scorecard. http://d2dtl5nnlpfr0r.cloudfront.net/tti.tamu.edu/documents/ums/congestion-data/pittsburgh.pdf

[2] Construction Legislative Council (2015). Transportation Action Plan: Connecting People and Places. P. 9.
[3] Ibid.
[4] Ibid.
[5] Ibid.
[6] Mon Valley Progress Council (2014). Expressway/Busway East Extension (E/BEE).
[7] TRIP estimate based on Council of Economic Advisers transportation investment impact on employment. http://www.whitehouse.gov/blog/2011/09/09/american-jobs-act-state-state.
[8] TRIP estimate based on Transportation Research Board of long-term jobs created by completion of transportation access improvements.
[9] TRIP analysis of Bureau of Transportation Statistics, U.S. Department of Transportation. 2012 Commodity Flow Survey, State Summaries.
[10] Area Development Magazine (2014). 28th Annual Survey of Corporate Executives: Availability of Skilled Labor New Top Priority. . http://www.areadevelopment.com/Corporate-Consultants-Survey-Results/Q1-2014/28th-Corporate-Executive-RE-survey-results-6574981.shtml?Page=2
[11] FHWA estimate based on its analysis of 2006 data. For more information on FHWA's cost-benefit analysis of highway investment, see the 2008 Status of the Nation's Highways, Bridges, and Transit: Conditions and Performance.
[12] Strategic Highway Research Program (2012). Transportation Research Board. "Interactions Between Transportation Capacity, Economic Systems and Land Use." P. 17.
[13] Strategic Highway Research Program (2012). Transportation Research Board. "Interactions Between Transportation Capacity, Economic Systems and Land Use." P. 1.
[14] Strategic Highway Research Program (2012). Transportation Research Board. "Interactions Between Transportation Capacity, Economic Systems and Land Use." P. 11.

[15] Strategic Highway Research Program (2012). Transportation Research Board. "Interactions Between Transportation Capacity, Economic Systems and Land Use." P. 22. Additional employment estimates were provided in response to a TRIP request.

[16] Strategic Highway Research Program (2012). Transportation Research Board. "Interactions Between Transportation Capacity, Economic Systems and Land Use." P. 8.

[17] Strategic Highway Research Program (2012). Transportation Research Board. "Interactions Between Transportation Capacity, Economic Systems and Land Use." P. 22. Additional employment estimates were provided in response to a TRIP request.