ECONOMIC IMPACT OF

PAGE AVENUE EXTENSION PHASE III

ST. CHARLES COUNTY, MISSOURI

August 2009

PREPARED FOR

ST. CHARLES COUNTY, MISSOURI

DEVELOPMENT STRATEGIES®
guiding effective decisions in
real estate, community, and economic development

DEVELOPMENT STRATEGIES®
guiding effective decisions in
real estate, community, and economic development

August 31, 2009

Mr. John Greifzu
St. Charles County Government
201 North Second Street
Room 423
St. Charles, Missouri 63301

RE: Economic Impact Potential for Page Avenue Extension Phase III

Dear Mr. Greifzu:

Development Strategies is pleased to submit this report on the potential short-term and long-term economic and fiscal impacts attributable to the construction and usage of the Missouri Route 364 Phase III roadway in St. Charles County, Missouri. Actually, the impacts are presented for the entirety of the MO-364 project, including the St. Louis County component, in order to demonstrate the full effects of the completed extension from about I-270 to I-64. This larger scale economic analysis is based on the assumption that the full roadway cannot reach its economic development potential until all components are completed.

The economic impact projections are primarily based on the capital investment to construct the roadway and on the economic development that could occur in its immediate corridor. Independent projections of the real estate development potential enabled us to estimate possible employment in the corridor by several major land use categories. In turn, this employment was input to the well-known IMPLAN economic impact computer model to determine multiplier benefits for the metropolitan area, the state of Missouri, and for the combination of St. Charles and St. Louis Counties. The IMPLAN model is operated by the St. Louis Regional Chamber & Growth Association using inputs provided by Development Strategies. Many of the inputs were obtained from St. Charles County government, the City of Maryland Heights, and from your engineering consultant, Crawford, Murphy & Tilly.

Economic impacts are presented as potential future economic activity in the three geographic areas, expressed in dollar amounts much like the nation's gross domestic product. They are also expressed in terms of job creation and in household earnings. IMPLAN also projects the revenue benefits likely to accrue to federal, state and local governments as a result of the direct economic impact of the roadway and the resulting multiplier effects.

It has been a pleasure to work with you on this assignment. Please let us know if further clarification is necessary.

Respectfully submitted on behalf of
DEVELOPMENT STRATEGIES

Robert M. Lewis, AICP, CEcD
Principal

Naomi Shanker
Senior Economist

Table of Contents

1.0 EXECUTIVE SUMMARY

Development Strategies was retained by St. Charles County Government to conduct an economic impact study of the short-term and long-term economic and fiscal impacts of the construction of Phase III of the MO-364 project. The construction of the roadway will have short-term economic impacts, induced by the construction spending and household earnings during the length of the construction, which is expected to begin in February 2010 and end in February 2012. However, longer-term impacts from the project will be generated by the use of the road and by the real estate development that is projected to occur once the road is completed.

Our study not only examines the economic and fiscal impacts from the completion of Phase III. Our study assumes that the full economic development potential of the entire corridor would not occur but for the completion of all components. Therefore, we include in our study the short and long-term economic and fiscal impacts on the state of Missouri and the bi-state St. Louis metropolitan area from the construction of the entire 21-mile corridor as well as the projected future real estate development along the entire corridor.

In addition, regional planning agencies conclude that the proposed completion of Highway 141 in St. Louis County would complement, and benefit from, the completion of MO-364. Funding has already been secured to complete the section of Highway 141 that connects Page Avenue to Olive Boulevard in the city of Maryland Heights. This roadway, also referred to as the Page-Olive Connector, intersect MO-364. Independent projections of potential future development along this corridor are included in the City of Maryland Heights Comprehensive Plan. Development Strategies includes these development projections in the analysis of long-term economic and fiscal impacts that would result from the future real estate development.

Our conclusions of the long-term direct and indirect economic impacts that will result from the projected future development along the MO-364 corridor as well as the Page-Olive Connector corridor reflect the impacts from *net-new* job growth only. It cannot be assumed that all of the projected new development will be occupied by new firms—that is, firms and employees that were not already located in the state or region. A shift in employees and firms from one regional location to another results in no net change in economic impacts. Anticipated job growth in the corridors that exceeds independent projections by the Missouri Department of Economic Development of job growth in the metro area was considered a shift of jobs from elsewhere in the region. The remaining job growth was considered "net new" to the region and, therefore, adding "net new" economic impacts.

To calculate the multiplier effects, the St. Louis Regional Chamber and Growth Association (RCGA) employed the IMPLAN economic impact modeling system. IMPLAN is a software tool that uses classic input-output analysis in combination with regional specific Social Accounting Matrices and multiplier models. Social Accounting Matrices represent flows of all economic transactions that take place within an economy; multiplier models are derived mathematically using the input-output model.

Economic impacts are demonstrated through multiplier effects in three primary ways:

1. **Output,** which is similar to the nation's and state's gross domestic product (GDP). That is, the output measure is the sum of all additional dollars that are spent in the state and local economies as a result of the direct spending on construction and by employee households.
2. **Earnings**, which show how much added income will accrue to state and local households because of the multiplier effects, in addition to the direct compensation paid to construction laborers and employees of future businesses in the area.
3. **Jobs** supported in the state and local economies as a result of the multiplier effects, in addition to construction jobs and the employees of future businesses in the area.

The study concludes that the construction of Phase III alone will have short-term economic benefits of:

- $118.2 million in direct spending, creating 1,080 jobs and $51.2 million in earnings in Missouri.
- an additional $97.0 million in state economic output; an additional $104.7 million in regional economic output (some of which—the Missouri side of the metro area—is included in the state output).
- $32.0 million in additional household earnings in the state; $31.8 million in the region.
- an additional 830 jobs throughout the state across all industries, 93 percent of which will be held by resident of the St. Louis region.
- $21.0 million in federal taxes and $9.0 million in state and local taxes.

Construction of the combined MO-364 corridor and the Page-Olive Connector will have short-term economic benefits of:

- $706.0 million in direct spending, create 6,455 jobs and $304.2 million in earnings in Missouri.
- an additional $574.0 million in state economic output; and an additional $621.7 million in regional economic output.
- $188.4 million in additional household earnings in the state, and $187.0 million in the region.
- an additional 4,875 jobs throughout the state across all industries, 92 percent of which will be held by resident of the St. Louis region.
- an additional $119.2 million in federal taxes and $54.0 million in state and local taxes.

The projected future development around the combined MO-364 and Page-Olive Connector roadway projects are estimated to have long-term economic benefits on the combined St. Charles County and St. Louis County region of:

- $16.2 million annually in direct business spending, 120 direct net new jobs annually with a payroll of $5.8 million annually.
- an additional $13.1 million annually in indirectly triggered economic output for the two counties.
- $4.7 million annually in indirectly triggered additional household earnings in the two counties.
- an additional 115 indirect net new jobs throughout the two counties across all industries.

- an additional $2.9 million in indirectly generated federal taxes and $1.7 million in state and local taxes annually.

The 21-mile MO-364 project is also expected to increase travel efficiency and reduce crash related costs. The study concludes that the regional roadway network will benefit from:

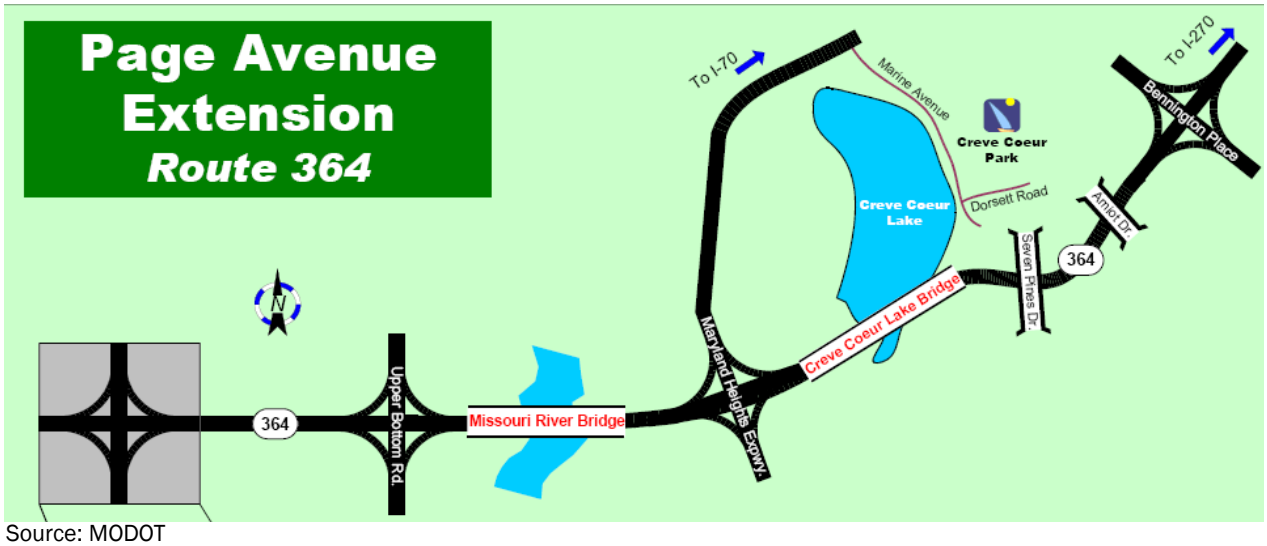
- annual travel time savings of $48.2 million in 2015 and $145.3 million in 2030.
- annual crash cost savings of $2.6 million in 2015 and $2.4 million in 2030.

2.0 PROJECT BACKGROUND

Development Strategies was retained by St. Charles County Government to conduct an economic impact study of the short-term and long-term economic and fiscal impacts of the construction of Phase III of the MO-364 project. The construction of the roadway will have short-term economic impacts, induced by the construction spending and household earnings during the length of the construction, which is expected to begin in February 2010 and end in February 2012[1]. However, longer-term impacts from the project will be generated by the use of the road and by the real estate development that is projected to occur once the road is completed. Improving access and diverting traffic from other highways, primarily Highway 70 and 370, will deem the MO-364 corridor very attractive for new development.

The Page Avenue Extension project, also referred to as the MO 364 corridor, was first explored in 1969 by the East-West Gateway Council of Governments. It was ultimately concluded that there was a definite need, from both an infrastructure perspective and an economic development perspective, to extend Page Avenue beyond Interstate 270. The plan to begin the project was officially approved in 1990.

Phase I of the Page Avenue Extension involved building a new four-lane road and bridge over the Missouri River, extending from I-270 to Route 94. Phase I was funded with both federal and state funds. Phase I opened for traffic in 2003.



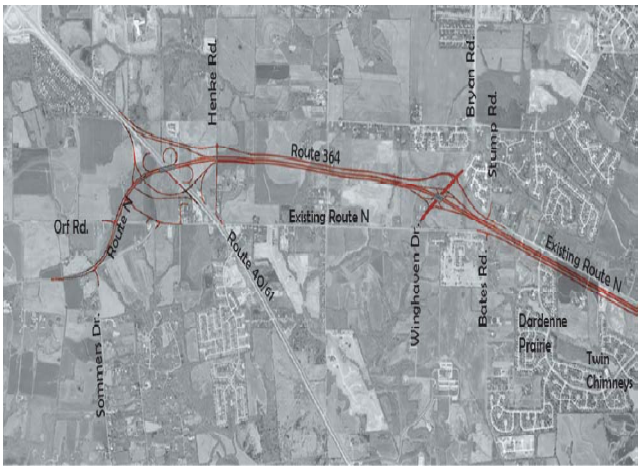
Source: MODOT

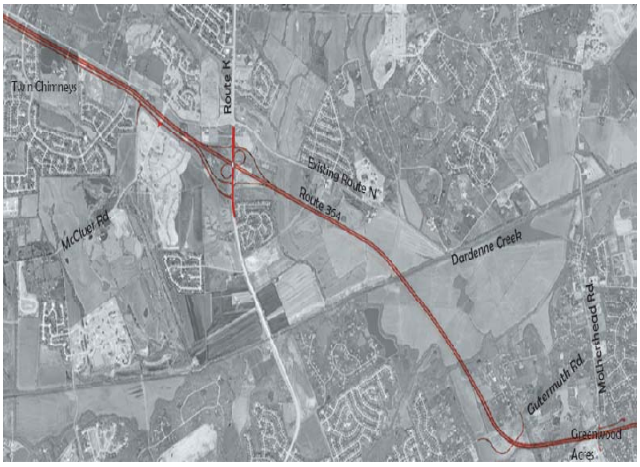
Phase II of the Page Avenue Extension is currently under construction. This phase involves building continuing the four-lane road along Route 94 until Mid-Rivers Mall Road. It also involves bridge work and the creation of a one-way outer road system. Phase II was funded with federal, state and local funds. The eastern section of Phase

[1] While construction is expected to take twenty-four months, spending will occur during the three calendar years of 2010-2012. Therefore, our economic impact model calculates impacts for the three years in which money is spent.

II is expected to be completed by late 2009; work on the remainder of Phase II is expected to begin in 2009 and 2010.

Phase III of the MO-354 will continue from Route 94 at Mid-Rivers Mall Drive to Highway 40. A new south outer road, which runs parallel to Route N between Route K and Bates Road in the city of O'Fallon, has been completed. St. Charles County is applying for TIGER grant funds to assist with funding to complete Phase III of the MO-364.





Our study not only examines the economic and fiscal impacts from the completion of Phase III. Our study assumes that the full economic development potential of the entire corridor would not occur but for the completion of all components. Therefore, we include in our study the short and long-term economic and fiscal impacts on the state and St. Louis region from the construction of the entire 21-mile corridor as well as the projected future real estate development along the entire corridor.

In addition, regional planning agencies conclude that the proposed completion of Highway 141 in St. Louis County would complement, and benefit from, the completion of MO-364. Funding has already been secured to complete the section of Highway 141 that connects Page Avenue to Olive Boulevard in the city of Maryland Heights. This roadway, also referred to as the Page-Olive Connector, intersect MO-364. Independent projections of potential future development along this corridor are included in the City of Maryland Heights Comprehensive

Plan. Development Strategies includes these development projections in the analysis of long-term economic and fiscal impacts that would result from the future real estate development.

Our study also examines the travel cost and efficiency benefits of completing the entire 21-mile corridor of MO-364. The U.S. Department of Transportation has published guidelines for estimating a monetary value for travel cost savings and crash savings. Those guidelines were applied for estimating the value of savings to the regional roadway network attributable to the completion of the MO-364 project.

3.0 METHODOLOGY

DIRECT AND INDIRECT IMPACTS

Economic impacts manifest themselves in a number of ways. The spending by any business supports other businesses which causes multiplier effects as that money continues to be re-spent through the economy. Employees are paid their wages and salaries, and their subsequent spending in their communities to support their households likewise triggers multiplier effects.

To calculate the multiplier effects of the proposed Phase III of the Page Avenue Extension, the St. Louis Regional Chamber and Growth Association (RCGA) employed the IMPLAN economic impact modeling system. IMPLAN is a software tool that uses classic input-output analysis in combination with regional specific Social Accounting Matrices and multiplier models. Social Accounting Matrices represent flows of all economic transactions that take place within an economy; multiplier models are derived mathematically using the input-output model. IMPLAN contains economic statistics at the national, state, county, and even zip code levels.

Economic impacts are demonstrated through multiplier effects in three primary ways:

1. **Output,** which is similar to the nation's and state's gross domestic product (GDP). That is, the output measure is the sum of all additional dollars that are spent in the state and local economies as a result of the direct spending on construction and by employee households.
2. **Earnings**, which show how much added income will accrue to state and local households because of the multiplier effects, in addition to the direct compensation paid to construction laborers and employees of future businesses in the area.
3. **Jobs** supported in the state and local economies as a result of the multiplier effects, in addition to construction jobs and the employees of future businesses in the area.

Industry sectors relevant to this economic impact study were identified for use in the IMPLAN model. The industries that apply to the economic activity that is projected to occur around the MO-364 corridor and the Page-Olive Connector of the Maryland Heights Expressway were chosen based on the projected growth of real estate development that could occur presumably because of the better access and efficiency the new roads provide. Those industries are:

- *Construction Sector*, because of the construction spending associated with building the new roads.
- *Financial, Professional, and Technical Services Sectors*, because of potential end users of the projected office space and mixed-use development.
- *Industrial Sectors*, because of potential end users of the projected industrial space development.
- *Retail trade*, because potential of end users of the projected retail and mixed-use space development.

- *Food service and drinking places,* because of potential end users of the projected retail and mixed-use space development.

IMPLAN multipliers are available at the national, state, and county levels. Our analysis focuses on the economic impacts on the State of Missouri, the St. Louis MO-IL metropolitan statistical area, and St. Charles and St. Louis Counties.

PROJECTED FUTURE DEVELOPMENT

We also include in our analysis the direct and indirect impacts that can result from potential future real estate development in the corridor. In 2005, Hanson Professional Services conducted a Traffic Demand Analysis for St. Charles County.[2] The study included projections of future economic development that could occur as a result of road and infrastructure improvements in the county. The county isolated 41 Traffic Analysis Zones (TAZ) within that study that are relevant to the MO-364 corridor. A map at the end of this section illustrates the location of these 41 TAZs. We extracted the projected square feet of development for those 41 TAZs and converted the square feet into estimates of employment using industry standard ratios. We also applied current industry averages to estimate the construction cost of building the projected development.

NET NEW CALCULATIONS

An important issue that arises with new roadways and the economic development that they attract is that some portion of that development will be occupied by firms and employees who relocate from elsewhere in the metropolitan economy. It cannot be assumed that all of the new development will be occupied by new firms—that is, firms and employees that were not already located in the region. Any shifting of employees and firms from one regional location to another results in no net change in economic impacts. So a technique to estimate "net new" employment was utilized. This technique compared the rate of employment growth projections in metropolitan St. Louis[3] to the anticipated additions of economic development space in the roadway corridors. Anticipated job growth in the corridors that exceeded the projected rate of job growth in the metro area was considered a shift of jobs from elsewhere in the region. The remaining job growth was considered "net new" to the region and, therefore, adding "net new" economic impacts.

TRAVEL EFFICIENCY AND COST SAVINGS

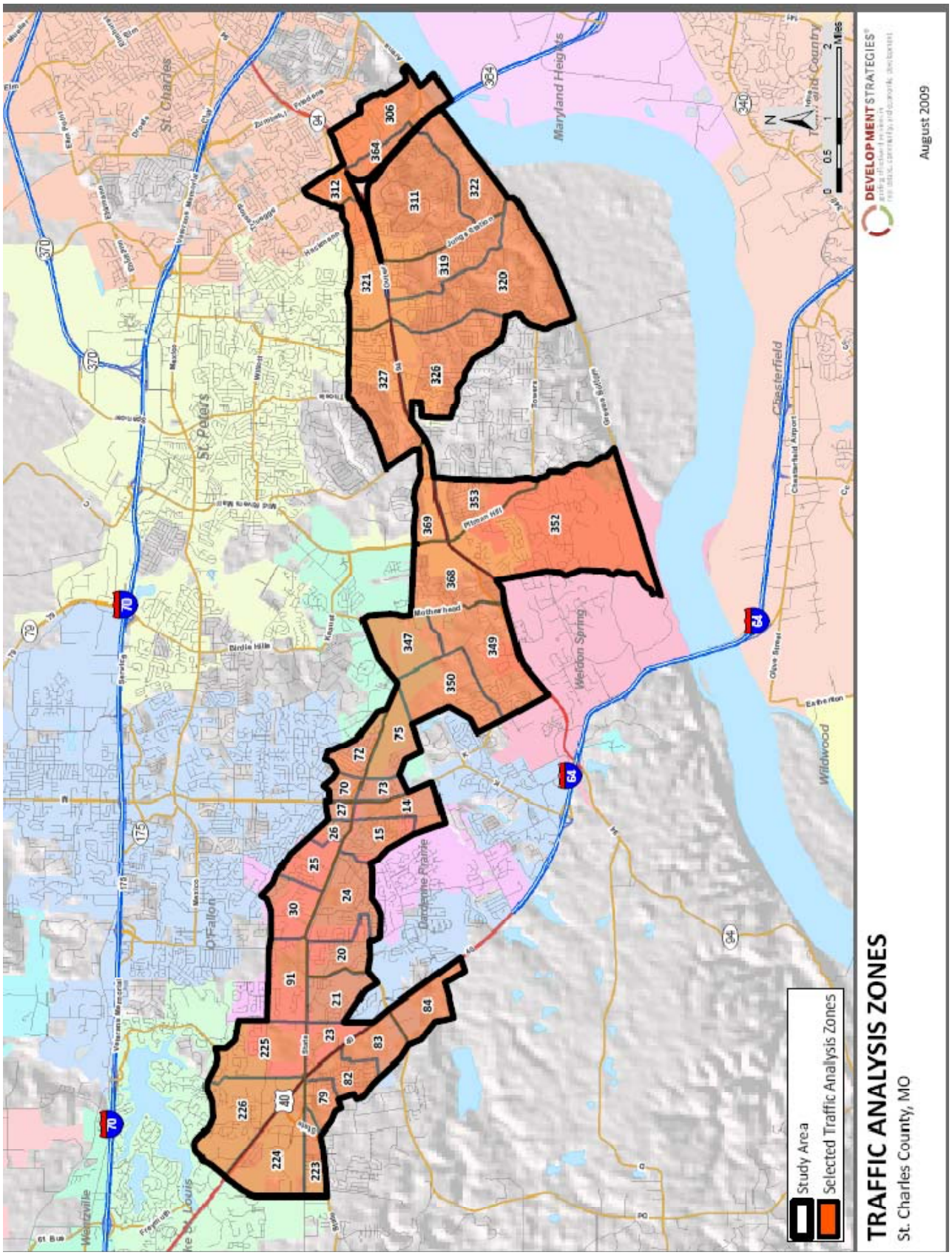
Construction data and employment projections were given to RCGA to input into the IMPLAN model which, in turn, provided the multiplier and related output factors discussed in this report.

All projections of multiplier effects are shown in 2009 constant dollars.

---

[2] *Travel Demand Model for St. Charles County: Arterial and Major Collector Roadways*, Hanson Professional Services, July 2005.

[3] Using independent projections prepared by the Missouri Economic Research and Information Center (MERIC) at www.meric.gov.


TRAFFIC ANALYSIS ZONES
St. Charles County, MO
August 2009
DEVELOPMENT STRATEGIES
Study Area
Selected Traffic Analysis Zones
St. Charles
St. Peters
O'Fallon
Maryland Heights
Chesterfield
Weldon Spring
Wildwood
Dardenne Prairie
Wentzville
Pitman Hill
Motherhead
Birdie Hill
306
364
312
311
322
321
319
320
327
326
353
352
369
368
347
349
350
75
72
73
70
27
14
26
15
25
30
24
20
91
21
84
23
83
225
82
79
226
224
223

4.0 ASSUMPTIONS

The analysis relies on data and assumptions provided by St. Charles County, the City of Maryland Heights and CMT. The data provided to Development Strategies included the estimated construction budget for Phase III of the MO-364 project, the construction cost for the completed Phases I and II of the MO-364 project, and the estimated construction costs for the final phase of the Maryland Heights Expressway, referred to as the Page-Olive connector. The estimated construction budgets for these three projects are summarized in Table 1.

TABLE 1

ASSUMPTIONS - Construction Period				
	Construction Cost	Less Land Value	Cost Input for IMPLAN Model	Construction Period
Phase III	$140,100,000	$22,000,000	$118,100,000	2010-2012
Phase I & II	$555,500,000	$26,450,000	$529,050,000	2000-2010
Page-Olive Connector	$65,000,000	$6,000,000	$59,000,000	2010-2011
TOTAL	$760,600,000	$54,350,000	$706,200,000	2000-2012

For the purpose of estimating the direct and indirect effects of the construction of these roads, RCGA only inputted into the IMPLAN model the value of the spending associated with the actual construction of the roads, that is, the total less the value of the land. Two IMPLAN scenarios were run to evaluate the economic and fiscal impacts from construction: 1) the impact of Phase III alone; and 2) the impact from the combined projects.

Development Strategies also received a copy of the *Travel Demand Model for St. Charles County: Arterial and Major Connector Roadways*, performed by Hanson Professional Services in 2003. This model provided the assumptions for potential future development in the entire MO-364 corridor. Our analysis assumes that, but for the completion of Phase III of MO-364, much of the development potential around Phases I and II will not occur. This assumption is supported by local and regional planning agencies. In addition, DS received information from the planning department of the City of Maryland Heights, in St. Louis County, which provided the assumptions for potential future development around the Page-Olive Connector. We include this future development in our analysis because the Page-Olive Connector intersects with MO-364. The two new roadways are complementary access points for a significant amount of potential new development.

Table 2 summarizes the projections of future development around the two new corridors. Development Strategies then applied industry standard ratios in order to convert the development square feet into estimates of future employment and construction costs.

TABLE 2

ASSUMPTIONS - Future Development				
MO-364 Corridor				
Land Use	Size		SF per Employee	Total Jobs
Office	400,000	sf	400	1,000
Commercial	1,860,000	sf	600	3,100
Residential	2,880	units	na	na
Industrial	22,000	sf	400	55
Hwy 141 - Expressway District				
Office	2,990,000	sf	400	7,475
Retail	2,000,000	sf	600	3,330
Mixed-Use	1,300,000	sf	600	2,165

Source: St. Charles County, City of Maryland Heights, The International Code Council® Building Valuation Data

Some development has already occurred along the MO-364 corridor since the completion of Phase I. However, projecting the phasing of future development is uncertain, given uncertain economic conditions. Therefore, for simplicity, our projections assume that the future development along MO-364 will occur in a straight-line fashion over the twenty-year period between 2010 and 2030. The Page-Olive Connector is expected to be completed in 2011. Again, we assume a straight-line projection of development. However, for the Connector, we assume a fifteen-year projection period between 2015 and 2030.

The values provided to RCGA for inputting into the IMPLAN model are all in 2009 values. Our analysis does not include an inflation factor. We assume a 3 percent discount rate for calculating the net present value of the economic impacts over the twenty-year period between 2010 and 2030.

5.0 ECONOMIC AND FISCAL IMPACT OF ROAD CONSTRUCTION

5.1 ECONOMIC IMPACT OF PHASE III CONSTRUCTION

Direct Impacts

Construction of Phase III is projected to begin in February 2010 and be completed in February 2012[4]. The total construction cost of the project is estimated to be $118.5 million, with approximately $31.2 million spent in 2010, $81.6 million spent in 2011, and the remaining $5.3 million spent in 2012. This annual spending will generate construction related earnings throughout the state of Missouri totaling $51.2 million over the construction period. Average wages within the St. Louis MSA are higher than the state averages, which results in a slightly higher impact for the metropolitan area of $53.5 million. Phase III will create 1,080 direct construction related jobs, both on-site and off-site during the three years of construction, throughout the state of Missouri. Approximately 93 percent of those jobs will be held by individuals who reside within the St. Louis metropolitan area. Table 5 summarizes the direct impacts from the construction of Phase III of MO-364. Table 3 summarizes the direct impacts from Phase II construction on both the state and the metropolitan area.

TABLE 3

Direct Impacts of Construction - Phase III of MO-364			
	Output	Earnings	Jobs
Missouri			
2010	$31,200,000	$13,500,000	285
2011	$81,600,000	$35,400,000	745
2012	$5,300,000	$2,300,000	50
Total	**$118,100,000**	**$51,200,000**	**1,080**
St. Louis MSA			
2010	$31,200,000	$14,100,000	265
2011	$81,600,000	$37,000,000	690
2012	$5,300,000	$2,400,000	45
Total	**$118,100,000**	**$53,500,000**	**1,000**

Source: IMPLAN

Indirect Impacts

Both the non-labor construction spending and construction earnings will ripple through the state and regional economies to create indirect impacts. We estimated the multiplier effects of the construction spending for both the state and the metropolitan area.

Missouri

Total construction spending will:

- trigger an additional $97.0 million in state economic output.

[4] While construction is expected to take twenty-four months, spending will occur during the three calendar years of 2010-2012. Therefore, our economic impact model calculates impacts for the three years in which money is spent.

- stimulate $32.0 million in additional household earnings.
- support an additional 830 jobs throughout the state across all industries.

St. Louis MSA

Total construction spending will:

- trigger an additional $104.7 million in regional output.
- stimulate $31.8 million in additional household earnings.
- support an additional 775 jobs throughout the region across all industries.

Table 4 summarizes the estimated indirect impacts of Phase III on the state and metropolitan areas

TABLE 4

Indirect Impacts of Construction - Phase III of MO-364			
	Output	Earnings	Jobs
Missouri			
2010	$25,900,000	$8,600,000	225
2011	$66,800,000	$22,000,000	570
2012	$4,300,000	$1,400,000	35
Total	**$97,000,000**	**$32,000,000**	**830**
St. Louis MSA			
2010	$27,700,000	$8,600,000	210
2011	$72,300,000	$21,800,000	530
2012	$4,700,000	$1,400,000	35
Total	**$104,700,000**	**$31,800,000**	**775**

Source: IMPLAN

Output per worker and earnings per worker for the construction industry sector are higher in the St. Louis MSA than in the state as a whole.[5] That is to say, a dollar spent in the MSA has a larger ripple effect than a dollar spent elsewhere in the state. Therefore, the underlying IMPLAN multipliers used to calculate the indirect impacts of direct construction spending are higher for the MSA than for the state. As a result, the indirect impacts (output and earnings) are higher for the metropolitan area than for the state alone. Jobs, however, will be higher in the state because productivity per worker is lower –it takes 1.07 workers in the state to do the same job that 1.0 worker can complete in the MSA.

5.2 FISCAL IMPACT OF PHASE III CONSTRUCTION

In addition to the direct and indirect economic impacts of the construction spending, the state and regional economies will benefit from direct and indirect tax impacts as well. The construction spending will generate sales taxes from purchasing materials as well as income tax from construction related earnings. The economic activity stimu-

[5] The MSA has higher output per worker and earnings per worker for all IMPLAN sectors with more than 10 net new jobs.

lated by the indirect impacts will generate federal, state and local tax revenue as well. The output of the tax analysis using the IMPLAN model does differentiate between direct and indirect induced tax impacts. In addition, it does not separate state tax revenue from local tax revenue.

The IMPLAN model estimates that the construction of Phase III of MO-364 will have the following direct and indirect tax impacts:

Missouri

- Direct and indirect federal taxes totaling $20.1 million.
- Direct and indirect state and local taxes totaling $9.1 million.

St. Louis MSA

- Direct and indirect federal taxes totaling $21.5 million.
- Direct and indirect state and local taxes totaling $9.4 million.

Table 5 summarizes the total estimated tax impact from the construction of Phase III.

TABLE 5

Direct and Indirect Tax Revenue Benefits of Construction - Phase III of MO-364		
	Federal	State & Local
Missouri		
2010	$5,400,000	$2,500,000
2011	$13,800,000	$6,200,000
2012	$900,000	$400,000
Total	**$20,100,000**	**$9,100,000**
St. Louis MSA		
2010	$5,700,000	$2,600,000
2011	$14,800,000	$6,400,000
2012	$1,000,000	$400,000
Total	**$21,500,000**	**$9,400,000**

Source: IMPLAN

5.3 ECONOMIC IMPACT OF MISSOURI 364 AND PAGE-OLIVE CONNECTOR CONSTRUCTION

Direct Impacts

When Phase III of MO-364 is completed the total construction cost of the MO-364 project will be an estimated $647.2 million, excluding the value of the land. When the Page-Olive Connector is completed the total construction cost will be an estimated $59.0 million, excluding land costs. In total, approximately $706.2 million will have been spent between 2000 and 2012 to compete the two roadway projects. This spending will generate construction related earnings throughout the state of Missouri totaling $304.2 million over the twelve-year construction period.

Earnings within the St. Louis MSA will total $318.1 million over the entire construction period. These earnings are higher than the state total due to the fact that average wages for the construction industry are higher in the St. Louis MSA than in the state as a whole; this results in a slightly higher impact for the metropolitan area. The combined roadway projects will create 6,455 direct construction related jobs, both on-site and off-site during the twelve-year construction period, throughout the state of Missouri. Approximately 92 percent of those jobs will be held by individuals who reside within the St. Louis metropolitan area. Table 6 summarizes the direct impacts from the construction of both MO-364 and the Page-Olive Connector.

TABLE 6

Direct Impacts of Construction - Combined MO-364 & Page-Olive Connector (2000-2012)

	Output	Earnings	Jobs
Missouri			
Total	$706,100,000	$304,200,000	6,455
St. Louis MSA			
Total	$706,100,000	$318,100,000	5,955

Source: IMPLAN

Indirect Impacts

Both the non-labor construction spending and construction earnings will ripple through the state and regional economies to create indirect impacts. We estimated the multiplier effects of the construction spending for both the state and the metropolitan area.

Missouri

Total construction spending will:

- trigger an additional $574.0 million in state economic output.
- stimulate $188.4 million in additional household earnings.
- support an additional 4,875 jobs throughout the state across all industries.

St. Louis MSA

Total construction spending will:

- trigger an additional $621.7 million in regional output.
- stimulate $187.0 million in additional household earnings.
- support an additional 4,535 jobs throughout the region across all industries.

Table 7 summarizes the estimated indirect impacts of the combined MO-364 and Page-Olive Connector roadway projects on the state and metropolitan areas

TABLE 7

Indirect Impacts of Construction - Combined MO-364 & Page-Olive Connector (2000-2012)			
	Output	Earnings	Jobs
Missouri			
Total	$574,000,000	$188,400,000	4,875
St. Louis MSA			
Total	$621,700,000	$187,000,000	4,535

Source: IMPLAN

As was mentioned in section 5.1, output per worker and earnings per worker for the construction industry sector are higher in the St. Louis MSA than in the state as a whole.[6] As a result, the indirect impacts (output and earnings) are higher for the metropolitan area than for the state alone. Jobs, however, will be higher in the state because productivity per worker is lower –it takes 1.07 workers in the state to do the same job that 1.0 worker can complete in the MSA.

5.5 FISCAL IMPACT OF MISSOURI 364 AND PAGE-OLIVE CONNECTOR CONSTRUCTION

The IMPLAN model estimates that the construction of the combined MO-364 and Page-Olive Connector roadway projects will have the following direct and indirect tax impacts:

Missouri

- Total direct and indirect federal taxes totaling $119.2 million, over the twelve-year construction period.
- Total direct and indirect state and local taxes totaling $54.0 million, over the twelve-year construction period.

St. Louis MSA

- Total direct and indirect federal taxes totaling $127.8 million annually, over the twelve-year construction period.
- Direct and indirect state and local taxes totaling $183.4 million, over the twelve-year construction period.

Table 8 summarizes the total estimated tax impact from the construction of the combined roadways.

TABLE 8

Direct and Indirect Tax Impacts of Construction - Combined MO-364 & Page-Olive Connector		
	Federal	State & Local
Missouri		
Total	$119,200,000	$54,000,000
St. Louis MSA		
Total	$127,800,000	$183,400,000

Source: IMPLAN

[6] The MSA has higher output per worker and earnings per worker for all IMPLAN sectors with more than 10 net new jobs.

6.0 ECONOMIC AND FISCAL IMPACT OF FUTURE REAL ESTATE DEVELOPMENT

The completion of MO-364 and the Page-Olive Connector is projected to induce a substantial amount of new real estate development around these corridors. Several primary land uses were identified in studies commissioned for St. Charles County and the city of Maryland Heights. These land uses include residential, general office, industrial, commercial, and mixed-use. Commercial often encompasses retail and restaurant uses; mixed-use space encompasses a combination of all types of uses.

Over the next twenty years, approximately 2.5 million square feet of office, industrial and commercial space is projected to be built in the MO-364 corridor. In addition, approximately 2,880 new residential units are projected to be built in the corridor. Along the Page-Olive Connector, which lies within the Expressway District of the Howard Bend Planning Area as outlined in the City of Maryland Heights Comprehensive Plan, approximately 3.0 million square feet of office space, 3.0 million square feet of mixed-use space, and 2.0 million square feet of retail space is projected to be built. The comprehensive plan does not specify a timeframe for this development; however, a conversation with the planning director for the city of Maryland Heights suggested that this amount of development could take ten to fifteen years once the roadway is completed. We conservatively assume a fifteen-year timeframe.

The projections of future development imply that a substantial number of new jobs will be created over the next twenty years. However, it is unlikely that most of these jobs will be "net new" to the two counties. According to labor projections for the St. Louis metropolitan area, employment in the region is only projected to grow by about 1.2 percent between 2006 and 2016.[7] St. Charles County experienced strong employment growth between 1996 and 2006, however, employment in St. Louis County decreased during that same period. This implies that growth is not necessarily net new, but rather a displacement of jobs from other areas. Given the large amount of development projected for the two corridors, we estimate that only a small share of jobs, approximately 14 percent, will be net new to the two counties. Only the net new job numbers were inputted into the IMPLAN model to determine the *net new* economic and fiscal impacts of the projected future development.

Due to the fact that all of the projected future development that the new roadways could induce is located in either St. Charles County or St. Louis County, we analyzed the economic and fiscal impacts of the future development on only these two counties. The reasoning behind this refined geography is because these counties are likely to capture nearly all of the direct and indirect benefits of the construction and operation of the future development simply because of its location within these two counties.

6.1 ECONOMIC IMPACTS OF PROJECTED REAL ESTATE DEVELOPMENT AROUND MISSOURI 364 AND PAGE-OLIVE CONNECTOR ON ST. LOUIS COUNTY AND ST. CHARLES COUNTY

Direct Impacts

The projected future development is estimated to create about 120 net new jobs per year, which will generate earnings for households in the two-county region of about $5.8 million annually. The businesses that occupy the future

[7] Missouri Economic Research and Information Center (MERIC) www.meric.gov

real estate are projected to spend approximately $16.2 million annually on additional non-payroll operating expenses. Over the twenty-year projection period, the net present value of the net new earnings will total about $86.0 million and spending on non-payroll operating expenses will total $241.2 million[8]. Table 9 summarizes the direct economic impacts that will occur if the future development is built.

TABLE 9

Direct Impacts of Future Development - MO-364 & Page-Olive Connector Corridors			
St. Charles and St. Louis Counties			
	Output	Earnings	Jobs
Average Annual	*$16,200,000*	$5,800,000	120
Net Present Value (20 yrs)	$241,200,000	$86,000,000	na

Source: IMPLAN

Indirect Impacts

The projected future development will generate multiplier effects that will be felt throughout the two-county region. The non-payroll operating expenses of the businesses located in the two corridors will induce spending by other businesses; the earnings of the net new employees will be spent on goods and services to support their households, a good share of which will be spent within the two-county region.

The IMPLAN model projects that the spending by the businesses and the net new employees that will work within the projected future development scenario will:

- trigger an additional $13.1 million annually in output for the St. Charles and St. Louis county economies.
- stimulate $4.7 million in additional household earnings for the two counties.
- support an additional 115 jobs annually throughout the two counties across all industries.

TABLE 10

Indirect Impacts of Future Development – MO-364 & Page-Olive Connector Corridors			
St. Charles and St. Louis Counties			
	Output	Earnings	Jobs
Average Annual	$13,100,000	$4,700,000	115
Net Present Value (20 yrs)	$194,200,000	$69,200,000	na

Source: IMPLAN

The net present value of the added output for the two counties is estimated to be $194.2 million; the net present value of the added household earnings is estimated to be $69.2 million.[9]

[8] Net present value calculations assume a 3 percent discount rate and twenty year projection period.

[9] Ibid.

6.2 FISCAL IMPACTS OF PROJECTED REAL ESTATE DEVELOPMENT AROUND MISSOURI 364 AND PAGE-OLIVE CONNECTOR ON ST. LOUIS COUNTY AND ST. CHARLES COUNTY

The projected future development will have direct and indirect fiscal impacts on the two-county region. The business' operating expenses, payroll and capital expenditures will be subject to federal, state and local taxes. The output from the IMPLAN model does not distinguish between which impacts constitute the direct tax impacts and which result from the indirect economic impacts. IMPLAN estimates that the businesses that locate within the planning areas surrounding the two corridors will generate direct and indirect annual federal tax revenue of $2.9 million and annual state and local tax revenue totaling $1.7 million. Over a twenty-year period, the net present value of the tax revenue stream from future development will total approximately $42.5 million in federal taxes and $25.2 million in state and local taxes[10]. Table 11 summarizes the direct and indirect tax impacts of the projected future development around the two corridors.

TABLE 11

Direct and Indirect Tax Impacts of Future Development - MO-364 & Page-Olive Connector Corridors		
St. Charles and St. Louis Counties		
	Federal	State & Local
Average Annual	$2,900,000	$1,700,000
Net Present Value (20 yrs)	$42,500,000	$25,200,000

Source: IMPLAN

[10] Ibid.

7.0 TRAVEL EFFICIENCY AND COST SAVINGS

In addition to the short-term economic impacts of the construction activity and the longer-term economic impacts of future development in the Missouri 364 corridor, drivers in the corridor will benefit from increased travel efficiency and cost savings.

The cost savings were estimated by the engineering firm of Crawford, Murphy and Tilly, Inc. (CMT). To estimate the cost savings associated with travel time and crash cost savings, CMT relied on federal guidelines outlined in papers issued by the U.S. Department of Transportation, Office of Transportation Policy; data published by East-West Gateway Council of Governments, the recognized planning organization for the bi-state St. Louis metropolitan area; and statistics published by the national travel assistance agency, American Automobile Association (AAA) and the Missouri Department of Transportation.

According to CMT, Phase III of the MO-364 project will induce total time savings on the metro area road network equal to $145.3 million in the year 2030. However, according to the East-West Gateway Travel Demand Model, commuters are more likely to travel further distances because of the shortened travel time. As a result, commuters will spend more on fuel and vehicle maintenance. Therefore, the new roadway is projected to increase vehicle operating costs by approximately $4.8 million in the year 2030. Furthermore, CMT estimates that the new road will reduce the number of accidents on the regional road network by 37 accidents per year in 2030. Reducing the number of accidents reduces the time and money spent by the police and medical professionals who respond to accidents, which has the economic value of saving approximately $2.4 million annually. Table 12 summarizes the annual cost savings projected by CMT.

TABLE 12

Annual Costs Savings Attributable to Phase III of the Page Avenue Extension

	2015	2030
Time Travel Savings	$48,200,000	$145,300,000
Vehicle Operating Cost Savings	$(4,000,000)	$(4,800,000)
Crash Cost Savings	$2,600,000	$2,400,000

Sources: U.S. Department of Transportation Guidance on Valuation of Time in Economic Analysis; Federal Highway Traffic Safety Administration Valuation of Statistical Life; East-West Gateway Travel Demand Model; AAA; MoDOT.

The net present value of the cumulative total benefits of the Phase III project is estimated to be $1.14 billion (2009 dollars) over the 20-year projection period. This translates into $1.16 billion in time savings, $54.9 million in additional vehicle operating costs, and $31.7 million in crash cost savings over the 20-year timeframe.

APPENDIX A – IMPLAN MODEL OUTPUT