

# Economic Impact Analysis

## **Brent Spence Bridge**

### Replacement/Rehabilitation Project

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**Prepared for:**

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## **Center for Economic Analysis and Development**

This study was conducted by the Center for Economic Analysis and Development (CEAD) housed in the Haile/US Bank College of Business at Northern Kentucky University. The study presents estimates of the economic impact of the Brent Spence Bridge Replacement/Rehabilitation Project on the Ohio, Kentucky and Cincinnati metropolitan economies. The study was prepared at the request of Build Our New Bridge Now.

### **About CEAD**

The Center for Economic Analysis and Development research staff applies its knowledge and expertise to real business problems through custom research and data information services. Through its collection and analysis of economic and market data, CEAD contributes to the diversification and growth of the Northern Kentucky/Greater Cincinnati economy by helping its companies, governmental agencies, nonprofits and economic development professionals make sound business and policy decisions.

## Summary of Results

The \$2.6 billion Brent Spence Bridge Replacement/Rehabilitation project is estimated to support 24,488 jobs throughout Kentucky and Ohio with most of the jobs (23,940 jobs) located in the Cincinnati MSA over the 10-year construction phase (an annual average of 2,448 jobs). These jobs will generate an estimated \$1.9 billion in labor income across the two states with again most of the labor income occurring in the Cincinnati market (\$1.8 billion). In addition to the economic activity generated within the region from the construction activity, fiscal impacts to the state and local jurisdictions will occur totaling an estimated \$193.1 million.

## Introduction

A region's infrastructure is the foundation of its economic growth. The importance of a region's road, bridge, transit, air and waterway network is never more apparent than after access and mobility are compromised whether by natural disasters or system capacity failures. The National Bridge Inventory lists the Brent Spence Bridge as functionally obsolete. As such, the Kentucky Transportation Cabinet and the Ohio Department of Transportation each consider the replacement/rehabilitation of the Brent Spence Bridge an infrastructure priority.

In early 2012, a review team comprised of representatives from the Federal Highway Administration, the Kentucky Transportation Cabinet, the Ohio Department of Transportation and project consultants conducted a Cost Estimate Review for the Brent Spence Bridge Replacement/Rehabilitation Project. Based on this review, it was estimated that the project requires a budget of more than \$2.6 billion. The anticipated start date for the estimates was set for January 2013 with a completion date of May 2022 for a total project time of approximately 113 months or 10 years.

Using these data, the Center for Economic Analysis and Development (CEAD) estimated the economic impact of the BSB Project on the Cincinnati MSA, Ohio and Kentucky economies.<sup>1</sup> The analysis includes estimated impacts on employment, labor income and output at the state and local levels.

## Economic Impact Analysis and Multipliers

IMPLAN is an economic assessment software package used by government agencies, colleges and universities, non-profit organizations, corporations, and community planning organizations across the country. A regional economic model, such as IMPLAN, is a tool used to objectively assess the expected economic impacts of various projects. The idea behind impact analysis is that an initial change in economic activity results in new rounds of spending—for example, building a new bridge will lead to increased production of asphalt and concrete. The increased production of asphalt and concrete will

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<sup>1</sup> For this analysis, the 12-county Cincinnati MSA was defined to Brown, Butler, Clermont, Hamilton and Warren counties in Ohio and Boone, Bracken, Campbell, Gallatin, Grant, Kenton and Pendleton counties in Kentucky.

lead to more mining. Workers benefiting from these increases may spend more by eating out or splurging on a new car or boat or spending more on entertainment. In other words, the direct impacts of a business's spending on the local economy tell only part of the story.

All industry sectors have an indirect and an induced effect on the economy, creating a total impact greater than the direct impact alone. These impacts are estimated using economic multipliers.

The impacts estimated in this report are all based on multipliers calculated by the U.S. Bureau of Economic Analysis, Regional Input-Output Modeling System (RIMS II) and embedded in the IMPLAN software.<sup>2</sup>

In general, construction impacts last as long as the construction project, as is the case in this analysis, and occur as the project spending occurs. For a project of this magnitude, it is not feasible to estimate year by year impacts. Therefore the impacts are based on the total project spending over the course of the project.

The spending estimates include inflation for the expected construction period.

## Report Definitions

- **Direct impact:** revenues or income of businesses or operations including labor, parts and supplies, property and property improvements and so on
- **Indirect effects:** additional employment, labor income or output within the region which is the result of business spending, such as the purchase of advertising services, cleaning services, vehicle purchases, etc.
- **Induced effect:** additional employment, labor income or output within the region which is the result of employee payroll (labor income) spending, on items such as utilities, medical care, groceries, childcare, etc.
- **Total impact:** the sum of the direct impact, indirect effect and induced effect.
- **Output:** is defined as the additional economic activity and spending in a region
- **Employment:** the number of full and part-time jobs
- **Labor income:** wages or pay plus benefits earned by individuals in the region
- **Multipliers:** quantify the "ripple effect" of industry spending and jobs. Each industry sector has its own effects on the economy. For example, hospitals spend more on laundry services than grocery stores. Average pay also differs by industry, and more highly paid employees spend more on groceries, cars and so on than employees with lower pay. IMPLAN provide multipliers on more than 400 detailed industry sectors.

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<sup>2</sup> More information about IMPLAN can be found at <http://implan.com/V4/Index.php> and about the RIMS II multipliers at <http://www.bea.gov/regional/index.htm>.

## Region of Analysis

The economic multiplier effect generated by new economic activity typically extends beyond a city's limits, as the businesses that share economic links to a local firm or industry are located throughout a broader region. For example, the construction of the BSB is likely to involve contractors, architects, engineers and construction material suppliers from neighboring metropolitan areas such as Cleveland and Louisville and other areas throughout Kentucky and Ohio. Depending on the size of the region, a different set of economic multipliers applies. A dollar spent in the City of Covington has a smaller impact on the city alone than it would have on the 12-county Cincinnati metro area as a whole. CEAD used IMPLAN's multi-region analysis to provide estimates for the Cincinnati metropolitan statistical area, the State of Ohio and the Commonwealth of Kentucky.

## Other Considerations

This analysis does not reflect the impact of construction on abutting or nearby businesses, property owners and residents. Multi-year construction projects may affect sales, property values, customer access and generate air and noise pollution. Businesses that are patronized by construction workers or remain relatively accessible may see increased sales during construction. Other businesses may see sales decline if access is restricted. It is beyond the scope of this analysis to estimate the potential impact on individual businesses and residences.

## Construction Cost and Economic Impacts

Using data from the *Brent Spence Bridge Replacement/Rehabilitation Project, Cost Estimate Review* conducted by the Federal Highway Administration, the direct construction costs are approximately \$2.634 billion. The cost review estimates that 48 percent or \$1.27 billion of the construction costs will occur in Ohio with 52 percent or \$1.36 billion spent in Kentucky.

These direct costs are broken down into three broad categories including preliminary engineering or design engineering costs (PE); right of way and utility costs (ROW+UT); and construction costs including construction engineering and construction change orders (CONST). Table 1 presents direct costs and indirect, induced and total economic impacts for the relevant project geographies. The multipliers presented in table 1 are averages across the broad spending categories. In making the calculations, industry specific multipliers were used for each category of spending.

**Table 1: Direct Costs and Economic Impacts of Brent Spence Bridge Replacement/Rehabilitation**

| <b>10-Year Impacts</b>  | <b>Cincinnati MSA*</b> | <b>Ohio</b>     | <b>Kentucky</b> | <b>KY-OH Grand Total</b> |
|-------------------------|------------------------|-----------------|-----------------|--------------------------|
| <b>DIRECT</b>           |                        |                 |                 |                          |
| Output                  | \$2,634,206,858        | \$1,270,703,251 | \$1,363,503,608 | \$2,634,206,858          |
| Employment              | 11,994                 | 5,581           | 6,413           | 11,994                   |
| Labor Income            | \$1,052,743,399        | \$477,999,360   | \$574,744,039   | 1,052,743,399            |
| <b>INDIRECT IMPACTS</b> |                        |                 |                 |                          |
| Output                  | \$781,500,412          | \$491,542,647   | \$402,695,020   | \$894,237,666            |
| Employment              | 4,146                  | 2,312           | 2,159           | 4,471                    |
| Labor Income            | \$325,289,459          | \$202,196,654   | \$147,805,910   | \$350,002,564            |
| <b>INDUCED IMPACTS</b>  |                        |                 |                 |                          |
| Output                  | \$1,230,132,330        | \$626,927,315   | \$643,555,330   | \$1,270,482,645          |
| Employment              | 7,800                  | 3,769           | 4,254           | 8,023                    |
| Labor Income            | \$447,297,717          | \$227,038,423   | \$232,537,687   | \$459,576,110            |
| <b>TOTAL IMPACTS</b>    |                        |                 |                 |                          |
| Output                  | \$4,645,839,601        | \$2,389,173,212 | \$2,409,753,958 | \$4,798,927,169          |
| Employment              | 23,940                 | 11,663          | 12,825          | 24,488                   |
| Labor Income            | \$1,825,330,575        | \$907,234,438   | \$955,087,636   | \$1,862,322,073          |
| <b>MULTIPLIERS</b>      |                        |                 |                 |                          |
| Output                  | 1.7637                 | 1.8802          | 1.7673          | 1.8218                   |
| Employment              | 1.9960                 | 2.0896          | 1.9999          | 2.0417                   |
| Labor Income            | 1.7339                 | 1.8980          | 1.6618          | 1.7690                   |

\*Cincinnati MSA is a subset of the Ohio and Kentucky numbers.

## Estimated Fiscal Impacts

In addition to the economic activity generated within the region from the construction activity, state and local jurisdictions also receive tax revenues. IMPLAN estimates indirect, induced and total impacts based on an increase in economic activity by an organization or industry. The indirect impacts are the result of the organization’s or industry’s spending within the region, while the induced impacts are the result of the employees’ spending within the region. These fiscal estimates are presented in Table 2.

**Table 2: Estimated Fiscal Impacts of Brent Spence Bridge Replacement/Rehabilitation (10-year)**

| <b>KENTUCKY</b>                       | Employee Compensation | Proprietor Income | Indirect Business Tax | Households          | Corporations       | Total                |
|---------------------------------------|-----------------------|-------------------|-----------------------|---------------------|--------------------|----------------------|
| Dividends                             | \$0                   | \$0               | \$0                   | \$0                 | \$159,204          | \$159,204            |
| Social Ins Tax- Employee Contribution | \$298,874             | \$0               | \$0                   | \$0                 | \$0                | \$298,874            |
| Social Ins Tax- Employer Contribution | \$692,463             | \$0               | \$0                   | \$0                 | \$0                | \$692,463            |
| Indirect Bus Tax: Sales Tax           | \$0                   | \$0               | \$31,785,313          | \$0                 | \$0                | \$31,785,313         |
| Indirect Bus Tax: Property Tax        | \$0                   | \$0               | \$17,560,475          | \$0                 | \$0                | \$17,560,475         |
| Indirect Bus Tax: Motor Vehicle Lic   | \$0                   | \$0               | \$638,426             | \$0                 | \$0                | \$638,426            |
| Indirect Bus Tax: Severance Tax       | \$0                   | \$0               | \$1,095,911           | \$0                 | \$0                | \$1,095,911          |
| Indirect Bus Tax: Other Taxes         | \$0                   | \$0               | \$1,814,071           | \$0                 | \$0                | \$1,814,071          |
| Indirect Bus Tax: S/L Non-Taxes       | \$0                   | \$0               | \$2,824,121           | \$0                 | \$0                | \$2,824,121          |
| Corporate Profits Tax                 | \$0                   | \$0               | \$0                   | \$0                 | \$3,501,445        | \$3,501,445          |
| Personal Tax: Income Tax              | \$0                   | \$0               | \$0                   | \$26,810,385        | \$0                | \$26,810,385         |
| Personal Tax: Non-Taxes (Fines- Fees) | \$0                   | \$0               | \$0                   | \$2,530,234         | \$0                | \$2,530,234          |
| Personal Tax: Motor Vehicle License   | \$0                   | \$0               | \$0                   | \$1,131,352         | \$0                | \$1,131,352          |
| Personal Tax: Property Taxes          | \$0                   | \$0               | \$0                   | \$318,664           | \$0                | \$318,664            |
| Personal Tax: Other Tax (Fish/Hunt)   | \$0                   | \$0               | \$0                   | \$790,252           | \$0                | \$790,252            |
| <b>Total State and Local Tax</b>      | <b>\$991,337</b>      | <b>\$0</b>        | <b>\$55,718,316</b>   | <b>\$31,580,887</b> | <b>\$3,660,650</b> | <b>\$91,951,191</b>  |
| <b>OHIO</b>                           | Employee Compensation | Proprietor Income | Indirect Business Tax | Households          | Corporations       | Total                |
| Dividends                             | \$0                   | \$0               | \$0                   | \$0                 | \$326,927          | \$326,927            |
| Social Ins Tax- Employee Contribution | \$584,268             | \$0               | \$0                   | \$0                 | \$0                | \$584,268            |
| Social Ins Tax- Employer Contribution | \$1,353,699           | \$0               | \$0                   | \$0                 | \$0                | \$1,353,699          |
| Indirect Bus Tax: Sales Tax           | \$0                   | \$0               | \$32,883,664          | \$0                 | \$0                | \$32,883,664         |
| Indirect Bus Tax: Property Tax        | \$0                   | \$0               | \$32,434,229          | \$0                 | \$0                | \$32,434,229         |
| Indirect Bus Tax: Motor Vehicle Lic   | \$0                   | \$0               | \$893,369             | \$0                 | \$0                | \$893,369            |
| Indirect Bus Tax: Severance Tax       | \$0                   | \$0               | \$12,997              | \$0                 | \$0                | \$12,997             |
| Indirect Bus Tax: Other Taxes         | \$0                   | \$0               | \$5,217,591           | \$0                 | \$0                | \$5,217,591          |
| Indirect Bus Tax: S/L Non-Taxes       | \$0                   | \$0               | \$3,653,979           | \$0                 | \$0                | \$3,653,979          |
| Corporate Profits Tax                 | \$0                   | \$0               | \$0                   | \$0                 | \$2,089,030        | \$2,089,030          |
| Personal Tax: Income Tax              | \$0                   | \$0               | \$0                   | \$17,630,303        | \$0                | \$17,630,303         |
| Personal Tax: Non-Taxes (Fines- Fees) | \$0                   | \$0               | \$0                   | \$2,356,454         | \$0                | \$2,356,454          |
| Personal Tax: Motor Vehicle License   | \$0                   | \$0               | \$0                   | \$1,054,318         | \$0                | \$1,054,318          |
| Personal Tax: Property Taxes          | \$0                   | \$0               | \$0                   | \$378,193           | \$0                | \$378,193            |
| Personal Tax: Other Tax (Fish/Hunt)   | \$0                   | \$0               | \$0                   | \$290,045           | \$0                | \$290,045            |
| <b>Total State and Local Tax</b>      | <b>\$1,937,969</b>    | <b>\$0</b>        | <b>\$75,095,829</b>   | <b>\$21,709,312</b> | <b>\$2,415,957</b> | <b>\$101,159,068</b> |

**Table 2: Continued: Estimated Fiscal Impacts of Brent Spence Bridge Replacement/Rehabilitation**

| <b>Cincinnati MSA*</b>                | Employee Compensation | Proprietor Income | Indirect Business Tax | Households          | Corporations       | Total                |
|---------------------------------------|-----------------------|-------------------|-----------------------|---------------------|--------------------|----------------------|
| Dividends                             | \$0                   | \$0               | \$0                   | \$0                 | \$470,614          | \$470,614            |
| Social Ins Tax- Employee Contribution | \$853,088             | \$0               | \$0                   | \$0                 | \$0                | \$853,088            |
| Social Ins Tax- Employer Contribution | \$1,976,528           | \$0               | \$0                   | \$0                 | \$0                | \$1,976,528          |
| Indirect Bus Tax: Sales Tax           | \$0                   | \$0               | \$62,789,418          | \$0                 | \$0                | \$62,789,418         |
| Indirect Bus Tax: Property Tax        | \$0                   | \$0               | \$48,621,679          | \$0                 | \$0                | \$48,621,679         |
| Indirect Bus Tax: Motor Vehicle Lic   | \$0                   | \$0               | \$1,488,582           | \$0                 | \$0                | \$1,488,582          |
| Indirect Bus Tax: Severance Tax       | \$0                   | \$0               | \$1,070,390           | \$0                 | \$0                | \$1,070,390          |
| Indirect Bus Tax: Other Taxes         | \$0                   | \$0               | \$6,846,033           | \$0                 | \$0                | \$6,846,033          |
| Indirect Bus Tax: S/L Non-Taxes       | \$0                   | \$0               | \$6,293,926           | \$0                 | \$0                | \$6,293,926          |
| Corporate Profits Tax                 | \$0                   | \$0               | \$0                   | \$0                 | \$5,379,696        | \$5,379,696          |
| Personal Tax: Income Tax              | \$0                   | \$0               | \$0                   | \$43,484,954        | \$0                | \$43,484,954         |
| Personal Tax: Non-Taxes (Fines- Fees  | \$0                   | \$0               | \$0                   | \$4,787,229         | \$0                | \$4,787,229          |
| Personal Tax: Motor Vehicle License   | \$0                   | \$0               | \$0                   | \$2,141,466         | \$0                | \$2,141,466          |
| Personal Tax: Property Taxes          | \$0                   | \$0               | \$0                   | \$680,996           | \$0                | \$680,996            |
| Personal Tax: Other Tax (Fish/Hunt)   | \$0                   | \$0               | \$0                   | \$1,060,677         | \$0                | \$1,060,677          |
| <b>Total State and Local Tax</b>      | <b>\$2,829,616</b>    | <b>\$0</b>        | <b>\$127,110,028</b>  | <b>\$52,155,322</b> | <b>\$5,850,311</b> | <b>\$187,945,277</b> |

\*Cincinnati MSA is a subset of the Ohio and Kentucky numbers.

## A note on likely payroll taxes for Covington and Kenton County

**Scenario 1:** assumes all Kentucky direct activity occurs within Covington, Kenton County.

**Scenario 2:** assumes all Kentucky *construction* activity occurs within Covington, Kenton County. With the other direct activity (utilities, professional services such as engineering, etc. occurring somewhere else within the Kentucky portion of the MSA).

These two scenarios frame the most likely range of actual impacts on tax collections for the city and county arising from the construction of the bridge.

Labor income includes wages along with benefits. This analysis is based on the assumption that 20% of direct labor income is benefits. Therefore, these calculations are based on 80% of the direct labor income. If the benefits are more or less than 20% of the direct labor income, the actual tax collections would be higher or lower accordingly.

| 10-Year Impacts             | Scenario 1: 100% in city/county              |
|-----------------------------|--|
| Total                       | \$574,744,039                                |
| Less 20% for fringes        | \$459,795,231                                |
|                             |  |
| Payroll tax collections     |  |
| Covington @ 2.5%            | \$11,494,881                                 |
| Kenton County               | \$1,466,350                                  |
| .7097% of first \$25,000    | \$1,137,827                                  |
| .1097% FICA Cap max \$76.02 | \$328,523                                    |
|                             |  |
|                             | Scenario 2: Construction only in city/county |
| Total                       | \$516,123,957                                |
| Less 20% for fringes        | \$412,899,166                                |
|                             |  |
| Payroll tax collections     |  |
| Covington @ 2.5%            | \$10,322,479                                 |
| Kenton County               | \$1,274,967                                  |
| .7097% of first \$25,000    | \$989,322                                    |
| .1097% FICA Cap max \$76.02 | \$285,646                                    |