

the **Ochs Center**  
for metropolitan studies



# If You Build It, Will They Come?

Reassessing the Economic Impacts  
of the Northern Beltline Project

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# Executive Summary

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The Northern Beltline—a proposed 52-mile, \$4.7 billion highway around northern Jefferson County, Alabama—has been a controversial transportation project in the Birmingham community for many years. Proponents of the Beltline claim it will reap enormous economic benefits, yet the only evaluation of the Northern Beltline’s economic impacts is a 2010 study by the University of Alabama’s Center for Business and Economic Research (CBER). The Ochs Center for Metropolitan Studies has critically reviewed the 2010 CBER study and relevant data regarding the Northern Beltline, the Birmingham metropolitan area, and cities throughout the Southeast. It has found significant flaws in CBER’s analysis and provides clear evidence that, contrary to the claims of supporters of the Northern Beltline, this project would be a poor investment of limited taxpayer dollars given its enormous cost and over-inflated economic benefits. It further concludes that the region could be better served exploring alternative transportation investments that produce better economic results at lower cost and in a shorter timeframe.

The Ochs Center’s specific conclusions regarding the Northern Beltline are as follows:

- 1. The 2010 CBER study is not a true cost-benefit analysis of the Northern Beltline’s impacts. It only looked at the benefits side of the equation while overlooking the project’s significant costs. The analysis also did not examine alternative transportation investments that could produce higher benefits at lower cost.**

The CBER study can best be characterized as a “benefits” analysis. The study did not assess the economic costs of the Northern Beltline. As described in this report, these costs are substantial.

The CBER study also did not examine the costs and benefits of spending taxpayer money on other transportation investments in the Birmingham metropolitan area or elsewhere in Alabama instead of the Northern Beltline. Therefore, the CBER study does not provide the basis for making an informed decision about whether the Northern Beltline represents the best investment of limited dollars.

In short, the CBER study looked at the Northern Beltline in a vacuum, answering only the question of whether there will be economic benefits to spending \$4.7 billion on this particular project versus doing nothing at all. Predictably, the CBER study concluded that there will be benefits, but there is no way to know based on the CBER study whether this project is a sound investment.

## **2. The Northern Beltline’s job-creation potential during construction has been exaggerated.**

The reliability of the CBER’s conclusions about the Northern Beltline’s overall economic impact hinges on an accurate estimate of the project’s job-creation potential, both during construction and after construction has been completed. The Ochs Center has determined that the CBER study’s estimates are inaccurate. The CBER’s numbers confuse permanent jobs with jobs available in any one year and rely on outdated Federal Highway Administration data. The actual number of construction-related jobs arising from the Northern Beltline project in any one year is much lower than has been claimed.

Specifically, the CBER study claims that the Northern Beltline, if built over the course of 17 years, would produce “69,535 direct and indirect jobs” during the construction phase. This is false; the

projection of 69,535 jobs is actually only referring to the “job-years” of work that the CBER study predicts the Northern Beltline will produce. One “job-year” is one job held by one person for one year. Using a 17-year construction schedule, the CBER study contends that constructing the Northern Beltline would only produce 4,014 actual jobs in any one year.

Even this number is too high because the CBER study relies on outdated Federal Highway Administration (FHWA) data. Prior to 2007, the FHWA projected that, on average nationwide, \$1 billion of federal highway construction aid would generate 27,800 job-years. However, due to the rising cost of construction materials, in 2010 the FHWA recalculated the impact of federal highway spending and decreased the number of jobs that could be created per \$1 billion from 27,800 to 13,000 job-years—a reduction of over 50 percent. Using the current and more accurate FHWA data, the true job-creation potential of building the Northern Beltline is 48,880 job-years over a 17-year construction period, or a maximum of 2,805 construction jobs in any one year.

Notably, not all of these construction jobs would be guaranteed to go to Alabama firms or workers. The most recent Corridor X construction contract went to an Atlanta firm.

### **3. The Northern Beltline’s ability to create permanent jobs has been overstated.**

The CBER’s 2010 study projected that the Northern Beltline, when and if it is completed, will produce 20,641 permanent jobs. As a threshold matter, econometric models such as the one used by the CBER for this estimate are notoriously unreliable for forecasting what may happen decades in the future. Using CBER’s own numbers, every man, woman and child who would come to Alabama as a result of the Northern Beltline would have to create 8 new jobs.

Furthermore, the CBER study failed to address the “present value” of the results it projected. Standard economic analytical procedure for predicting outcomes over multiple years is to measure them in terms of current dollars in the decision year,

a process known as “discounting.” Discounting is especially important here because the permanent jobs projected by the CBER will only materialize if and when the Northern Beltline is completed, which according to the CBER study would be 17 to 30 years in the future. While the Ochs Center accepted the CBER’s time estimate for the Northern Beltline’s construction, the Alabama Department of Transportation (ALDOT) has since estimated that more than 35 years would be needed to build the road.

The CBER study also assumes that the construction activity would not negatively affect any of the 7,500 existing firms located in the Northern Beltline corridor or their 45,000 employees. If any firms were disrupted, displaced or acquired for construction purposes, those job losses must be subtracted from the total number of jobs projected to be created by this project.

Moreover, beltline projects such as this often simply shift jobs around within a region. For example, employers currently located in the City of Birmingham who choose to relocate along the Northern Beltline are not creating “new” jobs for the metropolitan area. In fact, they would be taking jobs away from established neighborhoods and commercial districts. This important factor was not addressed by the CBER study.

### **4. The cost of building the Northern Beltline per job generated renders the project an inefficient economic development tool.**

The CBER’s study failed to address the “present value” of any jobs that the Northern Beltline would create. Discounting, as described above, is also important here because the permanent jobs projected by the CBER will only materialize if and when the Northern Beltline is completed. Therefore, using the Appalachian Regional Commission’s discount rate of 5 percent, the Ochs Center calculated the cost per 2012-equivalent job of the Northern Beltline.

- If the Northern Beltline were built in 17 years, incorporating the CBER study’s job-creation projections, the discounted cost to American taxpayers per job would be \$281,824.
- If the Northern Beltline were built in 17 years,

factoring in the more up-to-date FHWA job-creation projections, the discounted cost per job would be \$302,326.

- Recognizing that fiscal constraints would likely slow the construction schedule to 30 years or more, and using the FHWA's job projection data, the discounted cost per job would be \$456,016.
- At the state level, the cost per job of building the Northern Beltline would be between 20 percent and 32.32 percent of that total national cost, depending on Alabama's ability to recapture or reallocate certain federal dollars committed to the state if the Northern Beltline were not built. That means a cost per job to Alabamians of between \$91,203 and \$147,384. Notably, most of these jobs pay less than \$35,000 per year.

### **5. The Northern Beltline will require significant investments in sewers, connecting roads, schools, and other services in order to realize economic development, further increasing its overall costs.**

As was stated initially, the CBER's 2010 study does not analyze the costs of the Northern Beltline, particularly those costs that will be necessary to generate any economic development once construction is complete. Primary among these costs are sewer and secondary road investments. The Northern Beltline would run through many areas not currently served by sewer facilities, and local officials have already noted the difficulty in locating and constructing sewer lines in much of this area because of topographical challenges. These costs are vital to assessing the true economic development potential of this project.

The investment that will be needed for sewer expansion (which includes new pipes, pumps, and new or upgraded treatment facilities) is particularly significant, given Jefferson County's recent bankruptcy, which was caused in part by past investments in speculative sewer infrastructure. The costs of providing sewer to the Northern Beltline corridor must be fully assessed and weighed

against any potential benefits from the project. In addition, investment in school quality, crime prevention, and other services that are vital to attract residents and businesses must also be accounted for in a proper cost/benefit analysis. County residents, local governments, sewer ratepayers, and Alabama taxpayers could all be required to contribute to these investments. Pouring limited resources into realizing any economic development potential from the Northern Beltline will also mean less money available to make other necessary local investments to maintain or expand infrastructure, upgrade schools, prevent crime, and improve quality of life.

### **6. Building the Northern Beltline means less money available for other needed transportation projects in Birmingham and throughout Alabama.**

The Regional Planning Commission of Greater Birmingham has ranked the Northern Beltline behind 35 other transportation projects according to regional transportation importance, putting it roughly in the middle of all planned projects in terms of priority. Fifty percent of that ranking is determined by a project's potential to reduce traffic congestion. The economic development value of completing those other 35 transportation projects was not calculated by the CBER. This is value that will be delayed or lost altogether because of the state's price tag associated with the Northern Beltline. Other alternatives should be vetted, such as the extension of Corridor X (I-22) into downtown Birmingham to connect with I-20/59.

The Birmingham region, and the state of Alabama as a whole, both face increasing road and bridge maintenance needs and costs. Each of the nearly \$1 billion in state dollars spent on the Northern Beltline is one less dollar available to repair a road or bridge elsewhere in the state. Yet state gas taxes are fixed and are not indexed to reflect inflation. Automobiles are becoming more fuel-efficient, effectively reducing gas tax revenue for all states. Adding additional infrastructure burdens on a system that is already fiscally constrained will affect all taxpayers in Alabama. Because of the ongoing uncertainty associated with both federal and state funding, there is a good

chance that the Northern Beltline could wind up as a costly unfinished road to nowhere.

**7. Beltlines do not automatically produce economic development. Conversely, numerous cities have experienced significant economic development without building beltlines.**

This report compares Birmingham's Northern Beltline proposal with projects in other cities around the region. Many thriving southeastern metropolitan areas have no bypasses or outer beltlines. In fact, there is no consistent relationship between the presence or absence of a beltline and the unemployment rate in a particular metropolitan area.

Beltlines are not automatic job generators. Within the Birmingham area, for example, Bessemer—which is located near I-459 and I-20/59 and thus highly accessible—has not experienced appreciable population or business growth in the last decade. Moreover, neither the CBER analysis nor the 2012 ALDOT Reevaluation of the Northern Beltline measures the impact that other factors—school quality, demographic trends, business trends, crime rates, and the availability of developable land, for example—will have on the economic development potential of the highway.

## Conclusions

The Ochs Center for Metropolitan Studies concludes that the proposed Northern Beltline will not produce the economic benefits that have been claimed by its proponents. The limited, speculative, and far-off benefits of this project do not justify its \$90 million-per-mile price tag, which does not account for the other substantial costs that are necessary for development, such as sewer. Any hoped-for development from this project will not happen without making substantial other investments, which will entail redirecting even more limited taxpayer dollars. In short, the Northern Beltline is an inefficient engine to drive the economic development of the Birmingham metropolitan area. Alternative investments in transportation infrastructure should be evaluated and pursued that could generate more economic development faster and at lesser costs.

# Introduction

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This report assesses the economic costs and benefits of the proposed Northern Beltline (NB) in Jefferson County, AL. The NB is a proposed 52-mile highway that was originally envisioned to be 4 lanes; however, the project has grown to 6 lanes in size, and the most recent study by the Alabama Department of Transportation (ALDOT) states that the project will be designed to ultimately accommodate 8 lanes. The current estimated cost of this project is \$4.7 billion, which equates to \$90 million per mile.

This report is intended to provide a more comprehensive picture of the project than that contained in the 2010 report “Socioeconomic Indirect and Cumulative Impact Components for the Northern Beltline” prepared by the Center for Business and Economic Research (CBER) at the University of Alabama. The CBER report was relied on exclusively to predict the project’s economic benefits in the March 2012 Re-evaluation document published by ALDOT and the Federal Highway Administration (FHWA).

The CBER report is not a cost-benefit analysis. It predicts only beneficial impacts under ideal conditions without using standard cost-benefit analysis procedures or incorporating any standard transportation planning metrics. As such, the CBER report is best understood as a benefits analysis. The central weakness of the CBER analysis is that it narrowly focuses only on speculative job and income benefits while ignoring very real economic, social and opportunity costs.

The CBER report includes numerous caveats about the limitations of econometric modeling and makes suggestions for more robust analysis. Yet the caveats have been ignored by project proponents, and simplifying assumptions have been made that create a perception of exceptional economic outcomes. This is a critical flaw of the report: a \$4.7 billion investment should merit a sophisticated, more robust method of forecasting. Economic modeling over a 40-year time horizon

is an inherently inexact science. Given this fact, efforts must be made on the front end to build the most accurate model possible.

The Ochs Center for Metropolitan Studies has reviewed the CBER report and other project documentation, and concludes that many of the claims made in the CBER report are unfounded and misleading. Consequently, many of the arguments made by NB supporters in the print and electronic media are not factual and misstate the CBER report’s conclusions.

This report starts with an evaluation of the economic impacts of the NB project. The number of construction jobs supposedly generated by the NB is analyzed using up to date FHWA data to predict employment impacts. Following that, several potential labor market impacts ignored by the CBER report are presented. After that, the number of post-construction jobs predicted in the CBER report is critiqued, and methodological weaknesses underlying the highly optimistic job numbers are presented.

The CBER report focuses exclusively on the economic benefits of the NB while ignoring the true cost to federal taxpayers, the state of Alabama, and residents of the Birmingham region. The CBER’s forecast—while acknowledging the essential importance of providing ancillary services to realize and maximize economic impacts—does not quantify any of the real costs that Jefferson County residents will have to bear to finance sewer, stormwater, police, fire and other emergency services that will be needed to promote the type of growth envisioned by NB proponents. This report includes an entire section on the hidden costs of the NB.

The second half of this report focuses on other factors that make the NB a weak driver of economic growth. Data on population trends, road capacity, business trends along the NB corridor, school quality, case studies from other metropolitan areas, and environmental

justice are presented that highlight the flawed assumptions of NB project advocates.

This analysis concludes that the NB project will likely not generate the economic or transportation benefits that have been claimed by project supporters. The data used to calculate job projections were flawed, and the models used to predict future growth lack the sophistication needed to control for socioeconomic trends that limit growth potential along the NB corridor. The Birmingham Metropolitan Planning Organization projects that Jefferson County's population will grow by 1.5 percent by 2035. Construction of the NB will not substantially alter this growth rate.

Throughout this report, it is crucial to remember that all of the economic impacts cited in the CBER report hinge upon an accurate jobs forecast. If the number of jobs is inaccurate, then all of the other assumed economic impacts are also inaccurate.

# Economic Impacts

## The NB's Job-Generating Potential Has Been Overstated

### Introduction

One of the key measures of the value of an economic development project is the number of jobs generated. Projects with a high cost per job may not be cost-effective when compared to alternative economic development strategies. It is thus appropriate to examine the NB for its effectiveness in generating jobs given the dollars it will cost the citizens and taxpayers of the United States, Alabama, the Birmingham metropolitan area and Jefferson County.

A job is not as straightforward a measure as it might seem. Most of the jobs created by highway construction are short-term. As such, they are more accurately labeled “person-years of work.” One “person-year of work” is one job that will be held for one year by one person. Therefore the 69,535 person-years of work the CBER forecasts will result from the NB would produce 4,014 construction and spin off jobs from construction each year over a 17-year construction period and 2,274 one-year jobs each year if construction took 30 years. Overall, the CBER predicts that 20,641 permanent new jobs will be created in the NB corridor if and when construction is complete, 17 to 30 years or more from now.

Any new economic activity produces “direct” jobs and “spin-off” jobs. That is, the spending on materials, equipment, payroll and profits of a new activity produces incomes that then generate more local spending. This multiplier effect produces more income that leads to yet more spin-off employment. The CBER report assumes that all direct and spin-off jobs will be in Alabama. However, if employment on a construction project goes to workers from outside the local area, the spin-off jobs from that payroll are less likely to generate more jobs and income in Alabama.

Not all jobs are created at the same point in time, so the benefit they provide needs to be discounted to derive their “present value” today. The benefit of new

jobs goes beyond the payroll and other income they generate and includes qualitative benefits of work, such as contributions to family and community stability.<sup>1</sup> All of these benefits, not just those in dollar terms, need to be discounted. The CBER report did not account for the fact that a job today is worth more than a job 17 or 30 years from now.

The standard measure of a job in economic development calculations is that of a “net new job” for a geographic area. An increase in jobs along the NB corridor resulting from an employer relocating from Montgomery or Mobile may be a net new job for the Birmingham metropolitan area or Jefferson County, but zero net new jobs would be generated in Alabama as a state. Similarly, if the NB corridor gains jobs (or employers) at the expense of other locations within Jefferson County, those jobs are not net new jobs for the county or the region. The CBER analysis of the jobs that may be generated by the NB does not adequately address these issues.

Next, the number of jobs created during the NB's construction period is examined followed by post-construction economic impacts.

### Construction Period Jobs

The CBER analysis reports that the NB construction project will produce a total of 69,535 jobs for Alabama, which includes 65,277 jobs for the Birmingham metro area and 39,196 jobs within Jefferson County. The actual CBER estimates—found in Tables 8 through 10 of its report—predict that construction of the NB in 17 years will produce 4,014 jobs for each of the 17 years for Alabamians directly in construction and in spin-off activities. The 69,535 figure cited by the CBER is therefore not a count of permanent jobs, but rather the total number of one-year jobs that could be created over the course of the construction period.

The projected 4,014 jobs for Alabama over a 17-year

construction period is further based on the optimistic assumption that all construction jobs will go to people living in the immediate area of the construction—the common assumption underlying the use of the RIMS-II input-output matrix used by the CBER to calculate construction impacts.<sup>2</sup>

### Cost Inflation and the Impact on Predicted Employment

The optimistic job numbers predicted by the CBER relied on obsolete data from 2002. The CBER predicted total jobs based upon the outdated NB project budget of \$3.044 billion, 80% to be federal monies. Prior to 2007, the FHWA projected that 27,800 year-long jobs would be generated for each \$1 billion of federal aid highway capital spent on construction.<sup>3</sup> By those calculations, the federal eighty percent of a \$3.044 billion NB investment, or \$2.435 billion, would produce 67,699 direct construction job-years of employment and associated spinoff jobs across the nation. The CBER projected that 69,535 job-years would be generated in Alabama alone, roughly equivalent to the national average given the assumptions used.<sup>4</sup>

However, the CBER job projections and the earlier FHWA estimates were based on 2002 data that became obsolete due to exceptional materials and equipment



cost inflation in road construction in the years after 2002. By 2007, there was already evidence of a strong downward trend in the number of jobs expected to be associated with federal highway spending. In fact, in 2008 the Appalachian Regional Commission (ARC) commissioned a study of the economic impact of completing the Appalachian Development Highway System (ADHS)—of which the NB is a part—that documented the increase in non-labor costs.<sup>5</sup>

Therefore, the FHWA recalculated the impact of federal highway spending on jobs and decreased the number of jobs created per \$1 billion in federal spending from 27,800 person-years of work to 13,000 person-years of work on average—a reduction of more than 50 percent.<sup>6</sup> This downward revision was based on the findings of a 2007 study conducted by the US Department of Transportation’s Office of Inspector General (DOT OIG) which found that “escalation in the costs of commodities used in highway projects, such as steel and asphalt” caused the reduction in jobs generated per \$1 billion.<sup>7</sup> In other words, non-labor materials cost inflation that the CBER ignored has undermined the projected short-term job generating potential of the NB project.

At 13,000 jobs generated per \$1 billion in FHWA spending on roads, even the expanded NB budget, with a \$4.7 billion current estimated total cost, could not generate the 69,535 person-years of work during construction initially predicted based on the \$3.044 billion NB budget. Only 48,880 one-year construction and spinoff jobs (approximately 2,805 jobs per year) could be generated by the NB according to the most up to date analysis by the U.S. Department of Transportation. This assumes the optimistic 17-year build scenario, no further materials cost increases, and all new jobs accruing exclusively to Alabama residents.



Table 1

**The Impact of Highway Materials and Equipment Cost Increases on Construction Job Creation**

	CBER Estimates			FHWA Estimates		
	Alabama	Metro Birmingham	Jefferson County	Alabama	Metro Birmingham	Jefferson County
Total person-years of work	69,535	65,277	39,196	48,880	45,887	27,553
Annually over 17 years	4,014	3,768	2,262	2,805	2,649	1,590
Annually over 21 years	3,355	3,150	1,891	2,358	2,214	1,329
Annually over 30 years	2,274	2,135	1,282	1,599	1,501	901

Sources: Cols 2-4 – CBER Analysis, Tables 8, 9, 10. Column 5 Total from FHWA projections; all others in columns 5-7 are from columns 2-4, assuming same proportions of Alabama Total figure.

There is already strong evidence that all jobs will not go to Alabama firms and workers. For example, the final link of the nearby Corridor X project had 3 bidders, two from out of state, and an Atlanta-based firm was ultimately awarded that contract. This means that some of the assumed jobs, spinoff jobs, and economic multipliers will likely “leak” to other locales outside of Alabama, the Birmingham region, and Jefferson County.<sup>8</sup> To the extent that non-Alabama firms and construction workers are granted any of the construction contracts, both the direct job and spin-off jobs predicted by the CBER will be lower than predicted. Thus the 2,805 total construction jobs statewide, including 2,214 in the Birmingham metro area and 2,262 in Jefferson County, generated using FHWA’s new estimates, are still the upper bound of the possible annual employment effect of the construction of the NB project for Alabama.<sup>9</sup>

The data in Table 1 illustrate how the CBER estimates are adjusted downward using the most recent FHWA figures.

#### **Other Construction Period Labor Market Impacts Ignored in the CBER Analysis**

For the stability of the construction industry in the Birmingham region, it is probably a good thing that the NB will generate a lower level of construction labor demand than originally projected in the CBER report. If a major new project generates new demands for labor and the specific workers needed are not currently unemployed, the new project could increase labor costs for all other projects using the same types of workers. As of early 2012, there were only roughly 4,000 workers in the metropolitan area employed in heavy and civil engineering construction, the type of

work required for road-building. (See Appendix A for derivation of this estimate.) If the CBER employment forecast held up and the NB construction project launched on a 17-year construction schedule, there would be an immediate demand for 1,992 additional workers for road construction. That would equate to a 50 percent increase in the metropolitan area’s overall demand for heavy and civil engineering construction workers for all projects.

Such a localized expansion in demand could have a number of short-term effects on the local labor market:

- 1) Workers currently engaged in other civil engineering work might change jobs if they could get better wages in order to join a project expected to provide secure employment for 17 or more years;
- 2) Unskilled workers with no experience in the specialty subsector might be hired for the NB—or for other similar work competing for the same workers—raising project costs due to the need to train the new workers, their lower productivity or both;
- 3) Experienced workers from outside the metro area might migrate to the area to take the new jobs available, and if they did not become permanent residents, their spending would not produce as many local spinoff jobs as would be expected with resident workers;
- 4) Non-local contractors with available labor could win more contracts, further reducing the localized direct and spinoff employment, incomes and tax revenues that the construction project would generate.

Any analysis of the job-creation potential of new construction should consider the effects of a large public works project on the regional job market. This calculation of employment offsets was not conducted by the CBER.

The CBER's report also did not consider the effects of business disruptions in the NB corridor. According to their data, 20% of all businesses in Jefferson County (over 7,500 firms, accounting for over 45,000 jobs) are currently located along the NB corridor (p. 12). It is likely that some of them will suffer business disruptions as the result of the construction activity (assuming their sites are not taken for the road itself). If, on average, businesses near the road reduced employment by 1% over the lifetime of the disruption caused by the construction, there would be 450 jobs lost. Those possible 450 jobs are direct job losses and thus should be subtracted from the construction jobs expected before the number of spinoff jobs, total earnings, taxes and the like are derived in the impact model.<sup>10</sup>

In summary, the real job gains to Alabama from the construction of the Northern Beltline are not the almost 70,000 jobs often cited. Between the job losses likely to be generated and the lower number of person-years of work likely to be generated by higher construction costs, the jobs available in any one year during a 17 year construction period, including all spinoff jobs, are not likely to exceed 2,000 in Jefferson County. And as stated above, these jobs will not necessarily go to Alabamians or to those in the Birmingham metro area.

### Post-Construction Jobs

The much larger projected impact on employment, and the long-term economic measure for a project like this, comes from the permanent jobs generated once the road is built. The CBER estimates 20,641 permanent jobs in Alabama resulting from the NB, of which 19,377 would be located within the metropolitan area, including 11,635 in Jefferson County (Table 12, p. 22).

The CBER study predicts that 6,527 more people and 372 more businesses will locate in the NB corridor by 2040 if the project is built. However, many of these local benefits will likely result from firms and residents moving around within Alabama, the Birmingham metropolitan area or the county. This reshuffling of people and jobs should not be construed as net "new" jobs or residents.

Historically, the City of Birmingham has hollowed out as people with the means to do so have relocated away to the suburbs and exurbs. The construction of the beltline could have additional consequences for the economic health of Birmingham. Past Chair of the Birmingham Chamber of Commerce, David Sher, laments that the continued demise of Birmingham and the urban core "is devastating to our region."<sup>11</sup>

One rationale for building the NB is to replicate the growth experienced to the south of the city associated with building of I-459—which would catalyze residential relocation away from the city core to the northern suburbs. Given meager long-range population growth projections for Jefferson County as a whole (1.5% growth between now and 2035), many of the purported "new" jobs in the area are not likely to be net new jobs to the county, metro area or state.<sup>12</sup> As Blount County Chamber of Commerce official James Carr pointed out, "If you have improvements in infrastructure (i.e. the Northern Beltline)—will see more people moving out of Birmingham and Jefferson County because they are able to commute to jobs."<sup>13</sup>





A second important point to make about the projected post-construction economic impacts of the NB is that the CBER analysis assumes that the beltline will be completed.<sup>14</sup> In an era of federal fiscal instability—and when the federal Highway Trust Fund is approaching insolvency—that assumption is questionable at best.

A third point is that post-construction job benefits, if they materialize, will only occur in the distant future. The most optimistic scenario considered in the CBER report assumes 17 years of full-time construction after an initial start-up year. Their other projections assume 21 years (what they call the current legislatively sanctioned schedule) and 30 years. Recent news coverage suggests completion in 2048, which is more than 35 years in the future.<sup>15</sup> Therefore, to the extent that the major benefits of the NB only come when it is completed, all the claims of the road's potential contributions to economic development refer to benefits that may help the next generation, but have little impact on economic conditions and citizen well-being today in Alabama, Jefferson County or the Birmingham region.<sup>16</sup>

Fourth, the jobs that are predicted to be generated are all contingent on factors that may be beyond local control or capacity. The price of gas is currently generating new demands for living closer to employment hubs, and if the upward trend of gas prices continues, longer-distance commuters could be negatively affected.

Fifth, interstate highways create area development to the extent that they are accessible and the land near them has the infrastructure to support growth. Jefferson County, in its current financial condition, is ill-equipped to assure that the investment needed to maximize the economic development potential of the NB corridor will be made.

In fact, when surveyed about the impact of the NB, Jefferson County planners explained that,

“Topography is extreme in the study corridor. Not much flat land. The Jefferson County sewer situation will limit growth severely. It could be constrained by 30 years or more because the system is financially strapped. Sewer rates could go so high that they

chase development out of the county. Roadway system would also limit development because of the topography and the cost required to add new or expanded roads.”<sup>17</sup>

Finally, it should be noted that there are no economic models of any sort that offer consistent reliability or accuracy in forecasting specific events 17 years into the future—let alone 21, 30 or 35 years in the future. If socio-demographic factors (as described in later sections) are not factored into the model, the model can be unreliable. It is a well-known fact that it is risky to use the past to predict the future—but data from the past are the only inputs available to economic modelers. Therefore all the estimates of project impacts are little more than approximations, not assurances.<sup>18</sup>

Keeping these points in mind, the post-construction economic impacts predicted by the CBER will be addressed.

The CBER analysis examines the impact of the NB compared to a no-build scenario and claims the following on p. 21 (emphases added):

Construction of the highway should spur a 3.4 percent increase over baseline population, amounting to 6,527 *more people*. Building the NB will also raise the number of businesses by 4.0 percent over baseline, or 372 *additional businesses*. ...

The above-mentioned population and business growth that the NB provides will yield post-build annual impacts on Alabama of \$2.12 billion in output, \$1.10 billion in value added, \$664.5 million in earnings, 20,641 jobs, \$21.8 million in state income taxes, \$10.7 million in state sales taxes, \$1.1 million in state property taxes, \$13.4 million in local sales taxes, and \$6.8 million in local property taxes (Table 12). ...”

Even assuming that all the new people and businesses in the NB corridor will move in from outside Alabama—as opposed to merely relocating within the area, which is more likely—the impact that CBER claims these new people and businesses will have is hard to believe. The predicted 372 new businesses are projected to generate \$2.12 billion in new output. That means that each new firm would, on average, have to create over \$5.5 million in new output, either on its own, or through its links to other firms in the state. New firms rarely start off generating such high levels of output and research suggests that startup firms are creating fewer jobs today than they did in the past.<sup>19</sup>

Table 2 shows the percentage contribution to different economic measures that are claimed in the report. The top two rows are the CBER’s projected impacts of the NB post-construction; the next three lines are the baseline projections for the year 2040, used in their analysis to assess the project’s impact. The remaining

rows calculate percentage changes in the 2040 conditions projected to result from the NB.

Looking at the bottom of the Alabama column, a 0.1 percent increase in state population forecast by the construction of the NB is predicted to raise state output by five times that number. This means that, on average, each new resident will have to be five times as productive as the average current Alabamian. Similarly, for employment to go up at eight times the rate of population increase, every man, woman and child coming into the state would have to somehow create eight jobs by their very presence. The CBER report does not reveal how these numbers were derived.

The economic impact of the projected population growth in the Birmingham region is also remarkable according to the CBER’s analysis. The 0.5 percent increase in population in the second column of Table 2 is projected to raise area output by four times that percentage and generate more than six jobs for each new resident.

Within Jefferson County, the only area for which numbers of businesses were predicted by the CBER, a one percent increase in the number of firms is projected to generate increases of more than double that figure in both output and employment.<sup>20</sup> This is, in effect, a forecast that the firms moving into the NB corridor after the road is completed will, on average, be more than double the size of the firms that exist in the rest of

Table 2

**CBER Projections of the Economic Impact of the Northern Beltline**

<b>CBER Economic Impact of the NB</b>	<b>Alabama</b>	<b>Metro Birmingham</b>	<b>Jefferson County</b>
Output (Millions)	\$2,117.70	\$1,962.90	\$1,663.70
Employment (Jobs)	20,641	19,377	11,635
<b>CBER Baseline Data for 2040</b>			
Real Output (\$ M; 2000)	\$385,943	\$93,668	\$81,035
Total Employment (1000s)	2,707	603	523
Population	5,802,588	1,429,769	704,323
<b>Contribution of the Corridor</b>			
Real Output (\$ M; 2000)*	0.5%	2.1%	2.1%
Total Employment (1000s)	0.8%	3.2%	2.2%
Total Population (6,527 new in NB corridor)	0.1%	0.5%	0.9%
Total Businesses (372 new in NB corridor)	–	–	1.0%

Sources: Rows 1, 2 – CBER, Table 12, p.22; Rows 3, 4 – CBER, Table 6, p.15; Row 5 – CBER, Table 5, p. 14; Contribution rows – Ochs Center Calculations.  
 \*\$ M; 2000 refers to increases in 2000 real dollars as used in the CBER report.

Jefferson County today. The basis for such an expectation is not offered—and the very topography of much of the corridor itself suggests limits on the size of the facilities (and thus the employee size) of new firms. The CBER provides no explanations for the forecasts in Table 2. The analysis relied on the Alabama Econometric Model for much of its long-term projections. Such models are typically used to project tax revenues and other expected economic conditions in the relatively near term—generally up to five years into the future and occasionally ten years. Consequently, they are notoriously unreliable as sources of long-term forecasts. The economic activity outcomes projected can be wrong due to nothing more than the tool used by the CBER, because of unreliability for such extremely long-term forecasting.<sup>21</sup>

Given the known weakness of econometric models as predictive tools, users of the models should engage in reality checks. This is done to assure that the modifications imposed on the status quo model to generate the alternative forecast (one that includes the new investment in the economy) produce a plausible outcome, however realistic the modifications to the model appeared to be. It is also common practice to discuss the characteristics of the changes made to the equations and parameters of the base model.<sup>22</sup>

The CBER’s findings on tax revenues and other benefits supposedly generated by the NB are also highly questionable since they are driven by the job-creation projections. The sales tax revenue forecasts are especially questionable because there is no discussion at all

of the types of consumption and investment presumed to generate the taxes projected. Given the inflated effects of minor changes in people and businesses summarized in Table 2, the projected ancillary and fiscal benefits must also be considered to have been overstated.

#### **ALDOT’s Post-Construction Predictions— Conflicting Data but Similar Long-term Conclusions in the CBER and ALDOT Studies**

Some of the data and modeling used in the CBER report and the 2012 ALDOT Final Environmental Impact Statement Reevaluation (Reevaluation) are difficult to reconcile. Appendix L of the 2012 ALDOT reevaluation employs a gravity model to predict future residential and employment demand in transportation analysis zones (TAZs) near the NB. The Reevaluation states that any model that does not include critical variables associated with business and residential development decisions is flawed. Yet the gravity model used in the Reevaluation itself does not include those critical variables such as crime, school quality, and the availability of developable land.

Regardless, ALDOT notably predicts that the magnitude of the long-term residential and employment impacts of the \$4.7 billion investment will be small. Table 3 shows model projections under a 2030 no-build versus a 2030 build scenario. According to the Reevaluation, population in the TAZs will increase by only 2,208 and employment will increase by only 2,842 jobs as a result of the NB.

Table 3

#### **Long-Term Permanent Population and Employment Impacts Identified in Revised March 2012 Reevaluation**

TAZ	Population					Employment				
	2009	2030 No Build	2030 Build	No Build to Build Change	Percent Change	2009	2030 No Build	2030 Build	No Build to Build Change	Percent Change
Total	120,204	144,376	146,583	2,208	1.5%	23,642	37,275	40,116	2,842	7.6%

Source: March 2012 ALDOT Reevaluation

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# The True Costs of the Northern Beltline

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In any project appraisal, it is appropriate to ask if the benefits gained are worth the costs. It is logical and conservative to ask if the NB really warrants the massive outlay of tax dollars that it will require. In order to answer this question, two distinct issues must be addressed. First, is the return on the NB investment sufficiently great to warrant the taxes involved in financing it? Second, are those returns greater than the returns that might be generated if the same amount of money were to be spent on alternative public investments?

Both of these questions need to be addressed from the perspectives of the different political jurisdictions in which public investment decisions are made. To the nation as a whole, the NB has an estimated \$3.7 billion cost (80 percent of \$4.7 billion). To state and local leaders, Alabama's direct cost is 20 percent of \$4.7 billion, or about \$980 million. So the same project needs to be measured against a different cost figure for decision-making by the nation and the state. Whether the NB is a good investment when the nation is deeply in debt is a question to ask at the national level. The perspective of Alabama and Birmingham may be different from the national perspective (this is, of course, why Alaskans supported the "bridge to nowhere" in 2008 while it was challenged in Washington as a waste of money).

## How Much Will the Northern Beltline Really Cost Alabamians?

Some proponents of the NB claim that the federal funds needed to build the beltline are "free money." It therefore initially appears that the cost of the NB to Alabama is only 20% of the total project cost. The rest is federal grant money to the state. Using only the needed local match percentage as a measure of the cost to Alabamians of the project assumes that all of the federal 80% is "free" to Alabama—that is, monies from the federal budget that would not come to the

state for any other purpose if the NB were not built. However, there is no such thing as a "free lunch" in economics.

Putting aside the federal money, each of the nearly \$1 billion in Alabama state dollars dedicated to the NB project in order to get the federal match is one less dollar in state tax revenues that could be allocated to necessary road and bridge maintenance, and other transportation investments. These alternative investments could make the metro area more attractive to new businesses and residents than building the NB.

In addition, some of the funds that would need to be committed to the NB will have to be diverted from other possible federal funding for Alabama, the Birmingham metropolitan area or Jefferson County. The federal dollars currently slated for the NB result from effective use of political power by Alabama's members of Congress. They are not "free" to Alabama in the sense that the same political power could bring in funds for other purposes.

The federal funding for the NB comes from a number of different sources. The Regional Planning Commission of Greater Birmingham (RPCGB) has issued the *FY2012-2015 Transportation Improvement Program* (TIP) for the metro area.<sup>23</sup> The TIP distinguishes two major distinct federal programs contributing to the NB if it goes forward: 1) funds from the Highway Trust Fund administered by the Federal Highway Administration (FHWA) and 2) Appalachian Development Highway System (ADHS) monies allocated by the Appalachian Regional Commission (ARC). The FHWA funds (High Priority and Congressional Earmarked funds) may be used for mass transit, road maintenance and for other needs clearly evident in the Birmingham area. The ADHS money, on the other hand, can be used for only the NB.

Table 4

**Northern Beltline Federal Funding in 2012-2015 Transportation Improvement Plan**

	Projects Using High-Priority and Congressional Earmark Funds	Projects Using Appalachian Development Highway Systems Funds	Total Funding for all Northern Beltline Projects	Ratio of Earmark to Total
Total Funds for Projects	\$61,899,628	\$391,704,185	\$453,603,813	13.65%
Federal Funds for Projects	\$48,901,708	\$307,374,657	\$356,276,365	13.73%
State and Local Project Match	\$12,997,920	\$84,329,528	\$97,327,448	

Sources: Column 1 – Regional Planning Commission of Greater Birmingham, 2011. *FY2012-2015 Transportation Improvement Program*. Table 2.4.4 Appalachian Highway System Projects, pp. 44-46. Birmingham, AL: Birmingham Metropolitan Planning Organization, September, 2011; column 2 – *ibid.* Table 2.4.14 High Priority and Congressional Earmark Projects. Pp. 90-91.

Table 4 shows the total funding for the Northern Beltline in 2012-2015 that is reported in the TIP. The two major federal streams are distinguished in the second and third columns, and then summed in the fourth. The fifth column shows the proportion of the total funds for the NB that are scheduled to come from congressional earmarks, so there is no entry for the row referencing Alabama's match. The rows reflect total expenditures on the projects and then separate the costs into the federal cost and state and local match.

The total three-year budget for the NB in the TIP is \$453,603,813. The state and local match, which must be raised by Alabama taxes, is \$97,327,448. An additional \$48,901,708—the federal funds relying on earmarks in Column 2 of the table—also may be a cost to Alabama. Those funds rely on the capacity of legislators to steer funding to projects in their districts. The use of political capital to earmark those funds could limit the ability of legislators to steer other funding and projects to Birmingham and Alabama. These FHWA trust fund monies, by federal law, can be used for new roads, road maintenance, mass transit and other transportation-related purposes. Those funds would be lost to other possible Alabama projects if the NB proceeds.

Thus, the true cost to Alabama of the NB work projected for the 2012-2015 period is not \$97,327,448, but rather \$146,229,156—the sum of the total state match and the non-ADHS federal funds, \$48,901,708. This means that the cost in funds that might be used for other purposes in Alabama is not 20 percent, but rather 32.32 percent of the total NB budget for 2012-2015.

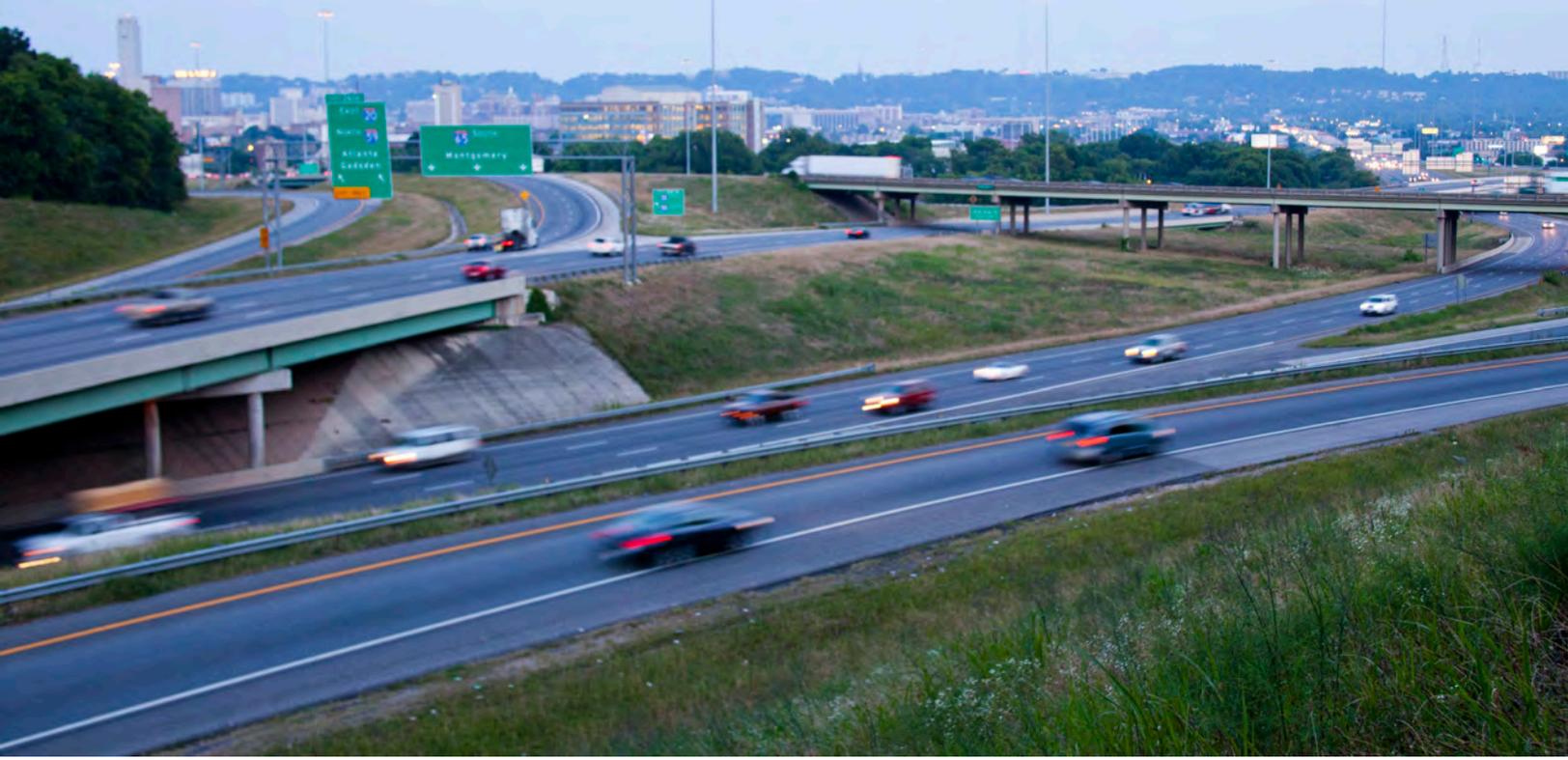
If the proportions of ADHS and other federal monies in Table 3 remained the same for the rest of the long

construction period of the NB, then the *real* Alabama cost of the \$4.7 billion budget (assuming no further cost escalations), would be over **\$1.46 billion**. That is the cost measured in terms of the possible funding available for other economic development activities if the NB were not built.

Whether the cost is viewed as \$1 billion or roughly \$1.5 billion of Alabama taxpayer money, this is only a measure of resources foregone. It is not a full measure of what economists call the “opportunity costs” of the NB. The actual opportunity costs are likely to be far greater: they are defined as the potential benefits those \$1.46 billion might generate if invested in other transportation priorities, such as those identified in the *Blueprint Birmingham* or the *2035 Regional Transportation Plan*.

### Cost Per Job

Using the CBER's best-case timing scenario—with a projected total of 4,014 jobs for each of 17 years of accelerated construction and 20,641 permanent post-construction jobs—a total of 24,655 jobs will be created by the NB. The cost per job to Alabamians according to their calculations is \$61,612 per permanent job (or permanent-equivalent construction-related job). The FHWA's revised projected employment impacts of highway spending would yield a reduced total of 23,244 new permanent-equivalent jobs. The cost per job to Alabama taxpayers using that number would be \$65,393. To put these costs in perspective, the current average annual wage in the Birmingham region, according to the Bureau of Labor Statistics, is \$41,690; the average annual wage for construction laborers is \$27,060 compared to \$35,110 for workers employed as paving, surfacing and tamping equipment operators.



However, even the costs per job listed above may be significant underestimates after discounting the future value of the NB's benefits to present-day terms.

### The Present Value of the NB Cost per Future Permanent Job

Any investment decision, public or private, involves dealing with expenditures and returns over time. Investment decisions are made on the basis of “discounted streams” of expenditures and revenues. The argument is simple: a dollar next year is worth less to someone today than a dollar now. The logic reflects the reality that people—and societies—discount the future relative to the present. This is done for a number of reasons:

- Immediate needs today are not satisfied by future returns—there generally is a *time preference* for current over future returns;
- The future involves *uncertainty and risk*, so the expected returns may not be realized, making them less valuable today;
- When it comes to money returns, inflation can reduce the buying power of a dollar, literally making it worth less; and
- Having a dollar today allows one to invest it and earn additional income by next year, which one could not do with a dollar received only a year from now.

Comparison of costs and benefits occurring at different points in time is impossible unless they are all

measured on a common scale. The measure that can create a common scale is the *discounted present value* of those investment flows. Calculating that value requires that three considerations—time preference, risk, and inflation—are combined to derive a discount rate.

The value in 2012 of a job in 2012 or 2015 relative to one in 2030 or later involves discounting two features of employment: the earnings and the qualitative social benefits from jobs. The CBER report discounts future earnings by assuming the same income per job generated over the entire construction period. It predicts the same total earnings for a 17-year construction period as it does for a 30 year construction period (see the constant numbers under “Earnings” in Tables 8, 9, and 10). This method overstates the present value of these earnings. By keeping the wage number constant, the CBER analysis has assumed that the percentage increase in wages in each future year would be at a rate that exactly equaled the sum of the inflation rate, rate of time preference, and an allowance for uncertainty. This assumption is empirically false: wages are not indexed for inflation, time preferences shift with the age structure of a population, and uncertainty cannot, by definition, be considered to be constant.

Future earnings have been discounted by CBER using the assumption that wage increases will exactly match the discount rate in each future year. However, the social benefits of the jobs themselves also need to be discounted to arrive at a current-year-equivalent job in terms of impacts on social well-being. Lower unem-

ployment today contributes to reduced crime, drug abuse and other social problems, and those benefits generate dollar savings to society. Delaying those benefits arguably imposes real costs today.<sup>24</sup> Those benefits are never estimated or calculated, let alone discounted, in the CBER analysis.

The job creation data associated with the NB in the CBER report can be discounted to estimate the present value of a stream of future employment. The same can be done for the stream of investment associated with the project—the annual expenditures over the construction period.

Analysis in this report uses a conservative 5% discount rate accepted by the largest funder of the NB project, the Appalachian Regional Commission (ARC).<sup>25</sup> The calculations used to discount present value findings are included in Appendix A to this report.

To derive an optimistic discounted jobs number, a 17-year construction schedule was assumed. This calculation leads to the highest present-value estimate of 2012-equivalent jobs because the time line is shortest, and it yielded 11,163 present-equivalent jobs for all of Alabama. The discounted cost of the NB assuming construction over 17 years is \$3.146 billion. Dividing that cost by 11,163 results in a *discounted cost to the nation for a 2012-equivalent job of \$281,824*.

Using the more recent adjusted FHWA estimates for job generation per \$1 billion spent—2,805 instead of 4,014 person-years of work for the 17-year construction period—the discounted jobs figure falls to

10,479 for the state. Or, a 2012-equivalent discounted cost of *\$302,326 per job*.

As of this writing, an estimated \$160 million a year will be available for construction of the NB, including Alabama's share.<sup>26</sup> With a \$4.7 billion price tag and assuming no cost increases, that rate of spending would mean the road would not be completed for over 29 years. Using a 30-year instead of a 17-year construction schedule, combined with the FHWA total job generation forecast, the discounted jobs would total 5,377. The discounted cost would be \$2.452 billion and ***the 2012-equivalent job discounted cost to the taxpayers of America would be \$456,016***.

This extraordinary cost per job results from the small number of person-years of work generated each year when the construction process is spread out over 30 years, combined with a 30-year delay in getting the benefits of the post-construction employment projected by the CBER. It underscores that the benefits to Alabama, the Birmingham metropolitan area, and Jefferson County are likely to shrink to a level that does not warrant the costs, even if the construction schedule does not get further delayed by budget constraints.

Table 5 presents the present value of the costs incurred over the project and the jobs it will generate. The three national cost figures do not reflect the cost per job to Alabamians, which can be calculated two different ways: the 20% cost match required for federal financing of highways, or the 32.32% figure derived in Table 4, p.16. The discounted cost per job to the taxpayers of the state are shown in Table 5 for both percentages,

Table 5

**Discounted Cost per Job Calculation for 17-Year and 30-Year Construction Schedule**

NB Project Element	17-Year Construction Schedule Discounted at 5%			30-Year Construction Schedule Discounted at 5%		
	USA Total Share	AL 32.32% Share	AL 20% Share	USA Total Share	AL 32.32% Share	AL 20% Share
Cost \$ Billions	\$3.146	\$1.017	\$0.629	\$2.452	\$0.792	\$0.490
CBER Calculated Jobs	11,163	11,163	11,163	5,718	5,718	5,718
CBER Cost per Job	\$281,824	\$91,085	\$56,365	\$428,821	\$138,595	\$85,764
FHWA Calculated Jobs	10,406	10,406	10,406	5,377	5,377	5,377
FHWA Cost per Job	\$302,326	\$97,712	\$60,465	\$456,016	\$147,384	\$91,203

and for two different job creation scenarios, that of the CBER and the more up to date (and lower) figure of the FHWA. At best—assuming a 17 year completion, the CBER employment forecast is valid, and all benefits accrue within Alabama—the cost per job for Alabamians would be as low as \$56,365, and the cost per job to the rest of the nation would be \$281,824. Under more realistic assumptions—that the 2010 FHWA job projections are accurate, that the state could have used some of its capacity to capture earmarks for other purposes, and that the project will take 30 years given the fiscal crisis now evident, *the cost to Alabamians per job created may be as high as \$147,384 and the cost to the rest of the United States would be \$456,016*. Again, it is worth keeping in mind that all of these costs are only those associated with building the road itself, and even these high numbers do not account for the significant secondary costs associated with generating any new economic development in this area such as sewer, as described more fully later in this report.

These numbers strongly suggest that the NB is an imprudent, exceptionally wasteful use of federal and state tax dollars. In a nation with a massive deficit, high unemployment and a tight budget for any investment in economic development and job creation, the spending is hard to defend.

Admittedly, Alabama and the Birmingham metro area would not bear that full present value cost of almost a half a million dollars per job. The local cost per job would be \$147,384 to generate a 2012-equivalent job paying about \$32,200 on average.

The likelihood that the present value of the benefits of the NB does not warrant the costs in terms of foregone opportunities is increased by the range of favorable assumptions behind even these numbers:

- That all construction jobs in the area will go to residents of Jefferson County, the Birmingham metro area or Alabama;
- That the increased demand for construction workers in the heavy and civil engineering sub-sector resulting from the NB project will not raise labor costs for other such work in the area;
- That the construction process itself will cause no job or income losses to any of the people or businesses along the NB corridor;
- That all of the jobs created in each geographic area post-construction will be a net new job, with

no businesses or workers displaced elsewhere in the county, metropolitan area or state economy;

- That there will be no economic, social, political or environmental changes that adversely affect demand for land and facilities along the NB in the period between the beginning of construction and completion, so that the forecasted benefits post-construction will be realized.

To the extent that one or more of these assumptions is violated, the 2012 cost to the citizens of Alabama per permanent job created by the NB project will rise to even more than \$147,384. Given these costs per job, the NB seems like an extremely poor economic development investment.

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# Hidden Costs Associated with the Northern Beltline

The CBER Report specifically notes that, "... to realize the economic benefits of the highway these communities will need to make optimal investments in infrastructure and amenities so as to attract both residents and businesses" (p. 22). There is no evidence that these investments will have occurred by the time the NB is completed and thus no reason to expect that the economic gains projected by the CBER will automatically be realized upon completion. The CBER does not identify any state or local entities that will be responsible for the ancillary investments, nor does it attempt to quantify those investments and their potential impacts on the project's estimated benefits.

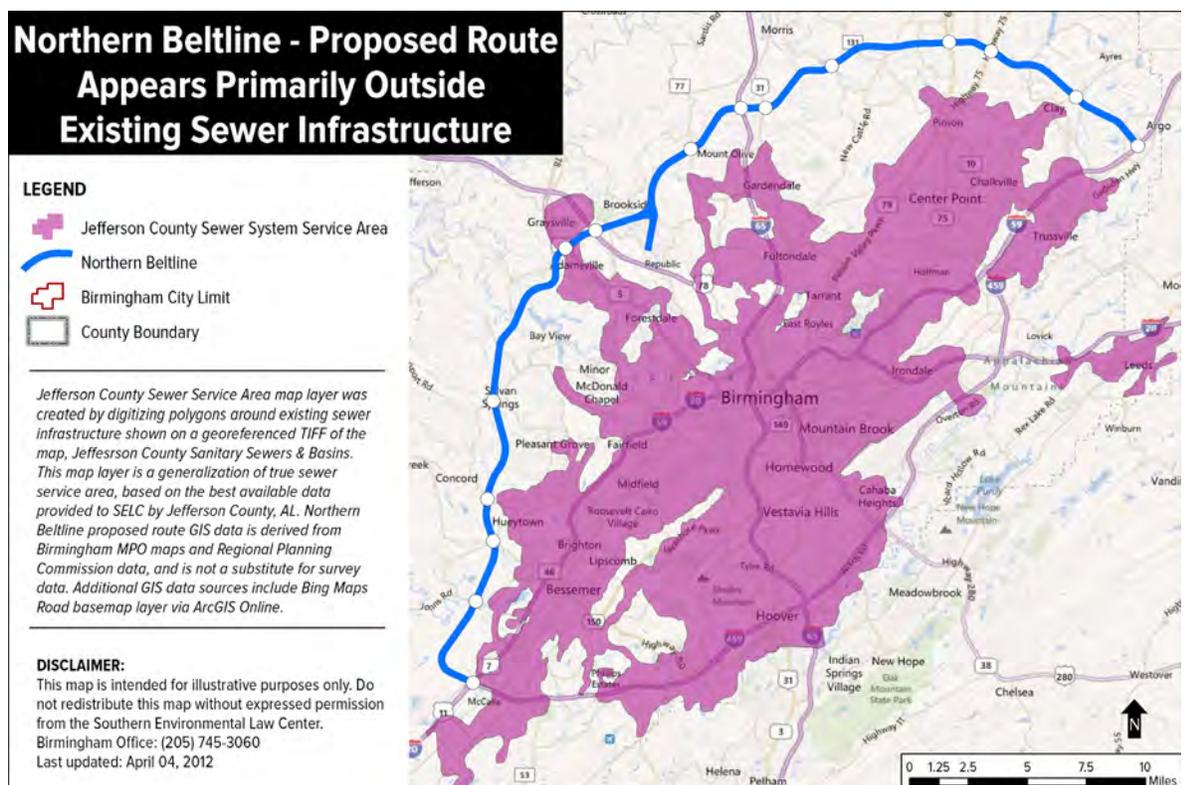
## Sewer Access and Funding

The CBER report points out that "highway projects generally contribute to economic development but do not automatically generate nor guarantee such growth ... The highway's ability to stimulate development may be constrained by the availability of sites, infrastructure, and amenities" (p.16).

According to Jefferson County Environmental Services Chief David Denard, the city is not planning on providing speculative sewer services to the NB. And, provision of sewer services in northern Jefferson County is complicated.

"You have two different challenges servicing the area where the beltline would run," Denard said. "One is the topography. The northern part of the county, and particularly the northwestern part, is a lot of up and down, up and down terrain. That can make it difficult to run sewer lines without having to add more expensive equipment like pump stations."<sup>27</sup>

The map shows that many communities along the NB corridor are currently lacking access to sewer systems. Jefferson County, as a result of poor investments in its current sewer system, is bankrupt. Given the county's bankruptcy, new sewer lines would have to be financed with revenues that have yet to be identified. Current sewer revenues are already under dispute, with lenders wanting a larger share and the county trying to hold on to funds for routine maintenance of its current system. Funds from the county are not likely to be available for further speculative investment with no immediate revenue returns.



With the NB taking the equivalent of a year's construction budget from ALDOT and all of the state's ARC road building funds, it is unlikely that Alabama itself can afford to further subsidize development in this portion of Jefferson County. That leaves the localities along the beltline corridor (as well as the Jefferson County taxpayer) as the lone financiers of new and expanded roads, new sewer lines, and improved public safety services, all of which are needed to attract new businesses.

Thus, the burden for future sewer service delivery is on the backs of Jefferson County taxpayers and the municipalities along the NB corridor. And the costs they face are massive. A 2007 North Carolina plan estimated the cost of sewer construction to be "approximately \$700,000 per mile = \$132 per linear foot."<sup>28</sup> This does not include the cost of pumping stations needed given the topography of the NB corridor, boring under existing highway roadbeds, or new or upgraded sewage treatment plants to accommodate the additional capacity. A Charlotte-Mecklenburg County engineer estimated the total costs of providing sewer services in the communities served along I-485 to be in the hundreds of millions of dollars.

These impacts are a substantial cost of the NB and its economic development purpose that neither the CBER report nor the NB's supporters have addressed.

Whether the construction cost is borne by municipalities through tax increases or borrowing, those costs will have to be paid back. Even using the CBER's estimate of 372 new firms projected in the NB corridor, those businesses are not likely to consume so much water and sewer services that they alone could pay back the investment in extending the lines. The cost, then, will fall on current ratepayers using the sewer system.

Current sewer costs in Birmingham, however, are already among the highest across metropolitan areas in the Southeast, with residential rates for over

90 percent of household consumers ranking either second or third among fourteen metropolitan areas used for comparison by Charlotte, NC. The business sewer rates in Jefferson County are already not cost-competitive with other metropolitan areas in the South. Extending sewer lines at a cost to existing business users could thus hurt existing employment generation and may even cost jobs.

If the capital cost of extending the sewer lines to the NB corridor were borne solely by new users locating in Jefferson County, then the sites to which the NB would provide access would be significantly less attractive. The cost to new investors for opening businesses in the area would have to include sewer construction, a cost element not required in other competing locations.

As the CBER report pointed out, new businesses and employers need sewer lines in the NB corridor to optimize development outcomes. The NB may improve physical access to some NB communities, but the existing lack of infrastructure and the obstacles to funding it are ignored by the CBER report. At its core, the NB project is about economic development. Would it be prudent for a municipality to invest millions of dollars on an industrial development park without providing all of the necessary infrastructure to create business demand?

### Opportunity Costs

The 2010 Birmingham Regional Transportation Plan (RTP) prioritized transportation projects on the basis



of a common ranking scale. Some factors may have changed in the interim, raising or lowering the priority given different alternatives, but the RTP provides some guidance for decision-making. The NB received a priority score of 28.1 in those rankings by the Regional Planning Commission of Greater Birmingham (RPCGB). A total of 18 High Priority projects and 17 Medium Priority projects received higher scores than the NB. If those 35 projects—all of them much smaller than the NB—could be completed using up all the \$1.46 billion state investment necessary for the NB, then the benefits to the region, as calculated by the RPCGB, would be greater than committing all these funds to the NB.

If, on the other hand, those 35 projects cost less than \$1.46 billion to complete, then, if the funds were used solely for transportation, some of the Low Priority projects—ranking below the NB—might also be completed. The key focus would be the weighted score for all the projects undertaken, or each project's priority score multiplied by its cost. If that weighted score was higher than 28.1, then the NB should not be pursued at the cost of losing the economic benefits of all those other transportation improvements.

If the weighted score would fall below 28.1 by including the Low Priority projects, or if the available \$1.46 billion could fund the entire list of transportation projects other than the NB with funds left over, then investments other than the NB need to be considered as alternative uses for the funds. To date, there have been no efforts to specifically prioritize the NB relative to other public investments. The CBER report only explores a build versus a no-build scenario and looks at only one project, the NB. As a result, decision-makers do not have the full array of potential options to make informed decisions about the best transportation investments for the Birmingham metro area.

A thorough project evaluation, including cost-benefit analysis (CBA) that compared a project to alternative uses of the funds involved—not just to doing nothing—would inform decision-making on the NB. A full cost-benefit analysis would ideally examine alternative uses of the funds and their tax and fee impacts on Alabama, the Birmingham region and Jefferson County.

The transportation challenges facing the city of Birmingham are immense. In 2009, the American Association of State Highway and Transportation Officials declared that “Alabama needs an immediate

investment of \$1.4 billion to bring about 4,000 miles of deficient roadways to an adequate performance level. For Interstates, 70 miles must be resurfaced each year to maintain current levels at a cost of \$140 million per year. The FY 2009 Interstate maintenance appropriation is \$120 million.”<sup>29</sup> In addition, an estimated 10% of Alabama bridges are deemed to be deteriorating and 10% are deemed structurally deficient.<sup>30</sup>

The Texas Transportation Institute attempts to quantify the costs of congestion in its Urban Mobility Report.<sup>31</sup> It estimates congestion cost per auto and total congestion costs for large and medium-sized Metropolitan Statistical Areas (MSAs). The total congestion cost includes estimates for travel delay, excess fuel consumption, and truck congestion costs. As Table 6 on the next page shows, the total congestion cost in the Atlanta MSA was about \$2.5 billion in 2011. Estimated congestion costs were high in the high-growth cities of Nashville (\$556 million), Raleigh (\$418 million) and Charlotte (\$378 million). The costs of congestion in Birmingham were estimated to be \$326 million. Beltlines do not necessarily lead to long-term congestion relief on existing roads.<sup>32</sup> The NB project will not mitigate existing congestion problems or their associated costs, reducing traffic on other interstates by only 1-3%; this is one factor that caused it to be ranked below 37 other transportation projects by the Metropolitan Planning Organization.

In addition, poor road quality can also cost drivers money. According to a 2007 estimate, 47 percent of Birmingham's urban roads were considered to be in poor or fair condition. That translates into an estimated \$344 in per-driver additional vehicle operating costs due to rough roads in Birmingham.<sup>33</sup> The state-required 20% match needed to secure ARC transportation funding for the NB would divert state highway funds away from existing road maintenance—passing along real costs to Birmingham drivers.

## Future Fiscal Constraints and Taxes

Another critical factor in considering the NB investment is future revenue streams. In most states, motor vehicle fuel taxes are used to build and maintain state roads. The effective state motor use fuel tax rate in Alabama is 18.5 cents per gallon. This rate is lower than North Carolina (38.9), Georgia (21.2), and Kentucky (21.9) but about the same as in Mississippi (18.6) and South Carolina (16.3).<sup>34</sup> The current politi-

cal environment is averse to tax increases, especially on fuel because it is already hovering around \$3.50 per gallon. However, the ability of existing motor use fuel taxes to adequately fund needed road maintenance will be strongly impacted by increasing federal corporate average fuel economy (CAFE) standards.

The 2016 CAFE Standard will raise fuel efficiency for cars and light-duty trucks to 34.5 miles per gallon by 2016 and 54.5 miles per gallon by 2025.<sup>35</sup> At the national level, increased fuel efficiency is predicted to exacerbate existing shortfalls in the highway trust fund. In fact, the Congressional Budget Office (CBO) estimates the losses associated with rising fuel efficiency would result in a \$57 billion drop in the highway trust fund between 2012 and 2022.<sup>36</sup> The CBO recommends that policy makers could avoid adding to the trust fund's shortfall by reducing spending on highways and mass transit or increasing the gasoline tax.

In Alabama, the impact of increased fuel efficiency on road funds will be pronounced. Appendix B demonstrates how new CAFE standards will affect state motor use fuel taxes between 2016 and 2025. The

estimate assumes a 5% growth in vehicle miles traveled between now and 2016 and between 2016 and 2025. The increases in fuel economy will have a corresponding impact on gallons of fuel consumed. The estimate uses total vehicle miles traveled in Alabama in 2009 as the base year.<sup>37</sup> The Bureau of Transportation Statistics estimates that Alabama residents drove over 56 billion miles in 2009. If the average fuel efficiency was 21.8 miles per gallon, then 2.572 billion gallons of gas were used. This generated roughly \$476 million dollars per year in fuel tax revenue. If average fuel efficiency increases to 34.5 miles per gallon, fuel tax revenues would drop to about \$316 million dollars (assuming VMT increases by 5%). By 2025, if average fuel efficiency reaches 54.5 miles per gallon, fuel tax revenues would drop to \$210 million. These figures are merely estimates, but all trends suggest that Alabama taxpayers will be forced to either reduce commuting or increase taxes to build and maintain roads in the future. This further underscores the need for Alabama to make prudent investments in transportation infrastructure given the increasing competition that will be coming for limited dollars.

Table 6

**Estimate of Congestion Costs in Major Southeastern Metropolitan Areas**

MSA	Yearly Delay Per Auto Commuter		Congestion Cost Per Auto Commuter		Total Congestion Cost (Millions*)	
	Hours	Rank	Dollars	Rank	Dollars	Rank
Atlanta	43	13	924	11	2,489	9
Tampa-St. Petersburg	33	27	670	28	1,097	19
Orlando	38	15	791	18	811	26
Nashville	35	23	722	24	556	31
Raleigh	25	42	537	40	418	39
Charlotte	25	42	539	39	378	41
Jacksonville	25	42	496	50	371	42
Memphis	23	52	477	52	358	43
Louisville	23	52	477	52	357	44
Birmingham	27	38	556	37	326	48
Richmond	20	64	375	68	262	53
Columbia	25	42	533	41	181	64
Knoxville	21	60	423	62	151	71
Little Rock	24	49	490	51	149	72

\*Includes estimates for travel delay, excess fuel consumed, and truck congestion cost. Source: 2011 Urban Mobility Report. The Texas Transportation Institute.

# The Northern Beltline Must Be Considered in Context

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According to the CBER report, “There are a host of other social, economic, and demographic variables that may be of interest but that would not add materially to the study goals. These include other workforce variables (e.g., occupations of employed residents, benefits, job creation, job flows, and skills), income variables (e.g., personal income and its components), demographic variables (e.g., vital statistics and marital status), and social variables (schools, infrastructure, resources, and institutions)” (p. 6). The ramifications of this statement are immense. The CBER admits that its model omits several factors that are typically associated with economic development and population growth. Each variable that is excluded weakens the validity of the CBER projections. In the following sections, real world socio-demographic trends are presented; the trends, at a minimum, should be acknowledged as factors that undermine the optimistic assumptions made in the CBER report.

In general, population pressures and business growth trends in Jefferson County do not support the construction of a 52-mile, 6-lane highway. The region lacks the organic growth pressures that are and have been present in other southeastern metropolitan areas which have elected to construct outer beltways. Many of the attributes that were present in the southern Birmingham metro area and Shelby County in the I-459 corridor—sewer availability, top notch schools, strong residential and business demand—are lacking along the NB corridor. However, these factors matter in the real world and have not been included in the CBER methodology. The next section of the report briefly reviews beltlines, and it then highlights data that should be critically assessed prior to engaging in a multi-billion dollar speculative investment.

## The Northern Beltline Compared to Other Southeastern Beltlines

Some advocates of the NB claim that Birmingham

is the only major southern city that does not have interstate highways that encircle the city.<sup>38</sup> This is false. Several large metropolitan areas have partially or fully completed beltlines—including Charlotte, Jacksonville, and Atlanta. However, many large southern metros such as Orlando, Knoxville, Tampa, and Chattanooga do not have beltlines. By way of comparison, the NB, along with I-459, would be about 86 miles, or 22 miles longer than Interstate 285 in Atlanta.

Table 7 on the next page shows that recent unemployment rates are not strongly correlated with the presence or absence of an outer beltline. Looking at these different cities, it becomes clear that the presence or absence of a beltline is not a meaningful indicator of economic growth. All of the metropolitan areas analyzed have different roadway configurations. Some have complete outer beltlines, some have partial beltlines and some have inner-ring highways.

While the literature on the impact of beltlines is extensive, a consensus on the impact of beltlines on economic development, sprawl, urban congestion, and air quality has not been established. Studies “indicate new highways bypassing the central business district of a community are seldom either devastating or the savior of the area. The locational shift in traffic can cause some existing businesses to close up or relocate, but it can also create some new business opportunities. Net economic impacts on the broader community are usually relatively small (positive or negative).” Moreover, retailers typically do not locate in areas with small population bases and a “bypass route without supporting infrastructure seldom ignites a development explosion.”<sup>39</sup>

Transportation researchers have pointed out that the impact of beltlines on development is complex. Many factors such as school quality, tax rates, crime perceptions and other non-transit factors affect the impact of a beltline.<sup>40</sup> Next, several case studies of beltlines are

Table 7

**Beltlines in Major Southeastern Metropolitan Areas**

MSA	Beltline	Complete	Name	MSA Unemployment	Length
Charlotte	Yes	No	485	10.0%	59 miles
Raleigh	Yes	No	540	8.1%	70 miles*
Nashville	Yes	No	840	7.1%	
Memphis	Yes	No	269	9.2%	60 miles*
Knoxville	No	No		6.6%	
Richmond	Yes	Yes	295	6.6%	53 miles
Jacksonville	Yes	Yes	295	8.8%	60 miles
Tampa	No	No		9.4%	
Orlando	No	No		9.1%	
Louisville	Yes	No	265	9.5%	44 miles
Atlanta	Yes	Yes	285	9.0%	64 miles
Chattanooga	No	No		7.6%	
Birmingham	Yes	No	459	7.2%	33 miles
Little Rock	Yes	No	440/430	7.4%	14/13 miles

Source: Bureau of Labor Statistics. February 2012 Unemployment by MSA.  
\*These numbers show the total miles if and when completed

presented to demonstrate that these projects are not always successful. The experiences of larger metropolitan areas are included to provide context on the growth factors affecting transportation planning and beltlines.

**Nashville, TN**

The Nashville region has experienced tremendous population and employment growth over the last 30 years. One consequence of this growth has been increased traffic congestion throughout the region, from Gallatin, TN in the northern Nashville region to Murfreesboro in the southern portion of the region. The growth in Nashville has occurred with a parkway, not an outer six lane beltline. The concept of an outer beltline has been debated in Nashville in the past, but it is not seriously considered by local government or the metropolitan planning organization. It is both too expensive and out of date with modern congestion mitigation strategies. Rather than focusing solely on more capacity, Nashville has embraced multi-modal approaches to transportation planning.

The MPO stresses that roads are the primary focus of regional transportation strategies, but multimodal

design are factors considered when ranking transportation projects. Nashville's 2035 regional plan reiterates the importance of buses, rail, and bikes to manage the region's growth. In total, the MPO is projected to spend \$6 billion on all transportation projects by 2035—only \$1.3 billion more than the cost of the Northern Beltline alone for a region that is much larger and more congested than Birmingham. This begs the question: with so much money dedicated exclusively to the Northern Beltline, how will other transportation projects in Mobile, Montgomery, Huntsville, Tuscaloosa, and elsewhere in Birmingham be funded?

**Charlotte, NC**

Construction of Charlotte's outer beltline, I-285, started in 1988, and the last segment is scheduled to be complete in 2015. The outer areas of Mecklenburg County and surrounding counties have experienced considerable economic activity. However, this growth in population and economic development is associated with structural economic changes in the larger economy, not the presence of I-285. The impact of the Charlotte airport (headquarters for USAir) and

the decision of both Wachovia Bank and Bank of America to relocate corporate headquarters to downtown Charlotte in the 1990s, away from the beltline, fueled tremendous growth throughout the region. For more than a decade, single-family housing permits in the region topped 20,000 annually. The Birmingham region has never experienced this type of housing demand. In sum, Charlotte's beltline has been built as a reaction to a long-term period of high growth.

Furthermore, even though Charlotte has invested substantially in its beltline, it has also invested heavily in light rail. The southern light rail corridor was opened in 2008 at a cost of \$467 million. It is approximately 9.6 miles long. Charlotte has also invested substantially in greenways for pedestrians and bicyclists in the last decade.

As discussed earlier, the Charlotte region experienced tremendous population and jobs growth from 1980 through 2010. This growth spurred demand for additional housing, land and infrastructure. It is notable that Charlotte's suburban and exurban growth has occurred simultaneously with inner-urban and downtown growth. The growth in suburban Birmingham, by contrast, has contributed to a hollowing out of inner-city neighborhoods.

### **Louisville, KY**

The Louisville region has experienced slight population growth over the last 30 years, with most of the population growth occurring in the suburbs and surrounding counties. Louisville built most of the Gene Snyder Freeway (I-265) in the 1980s and 1990s, but one final piece must be constructed to complete the entire loop as envisioned by 1950s planners—northern Jefferson County, KY must be connected to Southern Indiana.

The Louisville Bridges Project incorporates two components: an east end bridge that completes the outer loop and major renovations of the I-65 and I-64 intersections in downtown Louisville, including a new downtown bridge over the Ohio River. The project costs have escalated to nearly \$5 billion. Leaders recently endorsed a less costly alternative that is about \$3 billion, and it could involve tolling. The environmental impact assessment for this project concluded that no net new jobs will be created in the region. It found that any new jobs in the area near the completed beltline will result only from the reshuffling of jobs from other parts of the region.

The Louisville project also includes 17-foot wide pedestrian and bicycle lanes on both bridges, enhanced cross-river bus service, employer-based trip reduction programs, and intelligent transportation systems applications; none of these non-motorized assets are included in the NB project.<sup>41</sup>

### **Greenville, SC**

In Greenville, SC, transportation planners decided a beltline in southern Greenville County was needed in 1967. The project was formally added to Greenville's 20 year plan in 1988, and construction began in 1998. The project was financed by bonds that were supposed to be repaid by highway tolling revenue. According to researchers, "no major economic development can be attributable to the Southern Connector."<sup>42</sup> In fact, the Southern Connector's finance authority filed for bankruptcy in June 2010.<sup>43</sup> The lessons from the Greenville example are two-fold: one, economic projections can be wrong and two, roads do not always attract heavy usage.

### **Population**

A critical variable that must be considered when measuring the impact of the NB is historical population growth. Compared to other major southeastern metropolitan statistical areas (MSAs), Birmingham has lagged the southeastern US in population growth for three decades. Table 8 on the next page shows that Birmingham ranked 84th, 67th and 68th in population growth in the 1980s, 1990s, and 2000s, respectively. Other metro areas both with and without completed beltlines have consistently grown much faster than Birmingham.

Jefferson County, along with many of the small cities in Northern Jefferson County, has not experienced significant population growth pressures over the last two decades. In fact, Jefferson County experienced population decline between 2000 and 2010. The city of Birmingham lost 35,420 residents between 2000 and 2010. The Blueprint Birmingham reports that "the Birmingham region is not improving its competitive position with regards to educational attainment. This is a challenge for the region in an increasingly knowledge-intensive economy where the competition for New Economy jobs is higher than ever." Furthermore, it points out that many Birmingham leaders feel "that Downtown Birmingham does not offer the attractive, urban environment that young professionals are

Table 8

**Population Growth Rates and Rankings 1980 to 2010: 100 Largest Metropolitan Areas**

MSA	1980- 1990	1990- 2000	2000- 2010	1980- 1990	1990- 2000	2000- 2010
<i>Atlanta</i>	31.9%	38.4%	24.0%	17	8	16
Birmingham	2.9%	10.0%	7.2%	84	67	68
<i>Charlotte</i>	19.8%	29.8%	32.1%	33	13	8
Chattanooga	1.6%	10.0%	10.8%	90	66	55
Columbia	10.1%	18.0%	18.6%	55	36	27
<i>Jacksonville</i>	25.4%	21.4%	19.8%	25	26	24
Knoxville	5.9%	15.2%	13.3%	72	45	47
Little Rock	8.1%	14.1%	14.6%	63	50	40
Louisville	0.2%	10.0%	10.5%	91	65	57
Memphis	7.0%	12.9%	9.2%	66	54	61
Nashville	14.9%	25.1%	21.2%	41	21	21
Orlando	52.2%	34.3%	29.8%	4	9	10
Raleigh	34.6%	47.3%	41.8%	14	4	2
<i>Richmond</i>	13.1%	15.6%	14.7%	44	38	39
Tampa	28.2%	15.9%	16.2%	20	42	33

Source: Adapted from Population Growth in Metro America Since 1980. William H. Frey, Metro Policy Program at Brookings.  
Note: Italicized cities have fully completed beltlines (Charlotte's will be complete in 2015).

Table 9

**Population Change 2000 to 2010**

City	2010	2000	Change	City	2010	2000	Change
Birmingham	212,237	242,820	-30,593	Minor	1,094	1,116	-22
Adamsville	4,522	4,965	-433	Mount Olive	4,079	3,957	122
Brookside	1,363	1,393	-30	Mulga	836	973	137
Bessemer	27,456	29,672	-2,216	North Johns	145	142	3
Clay	9,708	4,947	4,761	Pleasant Grove	10,110	9,986	127
Gardendale	13,893	11,626	2,297	Sylvan Springs	1,542	1,465	77
Graysville	2,165	2,344	-179	Trussville	19,993	12,924	7,069
Hoover	81,619	62,742	18,877	Warrior	3,176	3,169	7
Hueytown	16,105	15,364	741	West Jefferson	338	344	-6
Maytown	385	435	-50				

Sources: US Bureau of the Census, 2010 and 2000 Census.

seeking today.” Inasmuch as the NB hastens the pace of suburban sprawl and the relocation of job opportunities away from the city, efforts to make downtown Birmingham more economically competitive and attractive to entrepreneurs will be compromised.

Population growth between 2000 and 2010 in some Northern Beltline places has been positive, as shown in Table 9. Gardendale, Clay, and Trussville have experienced substantial population growth—without the NB. However, Graysville, Bessemer, Adamsville, Maytown, Minor, Mount Olive, North Johns, Pleasant Grove, Warrior and West Jefferson have experienced negative or flat population growth. Table 7 (p. 26) also includes Hoover and Birmingham for comparative purposes. The sum of net population increase for all towns near the Northern Beltline is only 12,395 new residents.

These numbers are important because population growth and pressure is considered to be a primary factor that drives demand for transportation projects like beltlines.<sup>44</sup> Neither Birmingham nor the region has experienced the type of residential and business growth that is associated with strong demand for additional freeways. As an example, despite its accessibility at the terminus of I-459 and I-20/59, Bessemer continues to lose residents and jobs. This suggests that “access” alone is not the primary driver behind economic growth and development.

### Road Capacity

Total roadway miles do not correlate with cities’ economic success. Some southern metropolitan areas that are more economically successful than Birmingham have fewer total road miles and interstate miles. An analysis of Federal Highway Administration data from 2008 suggests that the Birmingham MSA is not suffering from a lack of road capacity. It has considerably more total miles of roads than the Raleigh, Louisville and Memphis metropolitan areas, but with a smaller population. In fact, the Birmingham met-

ropolitan area has more road miles per capita than any of those listed in Table 10 (next page) except Montgomery and Little Rock. However, Birmingham residents travel more daily vehicle miles per capita (13.24) than any other of the metro areas listed except Little Rock. The total daily vehicle miles traveled per capita in Birmingham is higher than in larger metropolitan areas like Atlanta, Charlotte, and Jacksonville. High levels of daily vehicle miles traveled per capita are associated with sprawling metropolitan areas, suggesting that inefficient land use planning rather than road accessibility is the major factor driving traffic congestion.

### Business Trends in the Northern Beltline Communities

The NB is foremost—as admitted by proponents—an economic development project. The US Census County Business Patterns (CBP) data from 1998 to 2009 underscore this report’s concern about economic development expected if the NB is constructed. The CBP data are collected from private sector employers at the zip code level and do not include public sector jobs. Table 11 (p. 31) highlights the toll of job losses on Northern Beltline geographies between 1998 and 2009. It also shows the strong increase in the total number of establishments and the total number of



Table 10

**Road Miles and VMT Per Capita in Southeastern Metropolitan Areas**

Metro Area	Estimated Population (Thousands)	Total Miles	Per capita	Interstate	Interstate VMT/Capita	Total	Total Per Capita
Montgomery	207	1,726	8.34	2,265	10.94	7,814	37.75
Raleigh	719	3,732	5.19	6,039	8.40	25,376	35.29
Birmingham	695	4,833	6.95	9,200	13.24	24,354	35.04
Little Rock	389	2,749	7.07	5,742	14.76	13,334	34.28
Knoxville	466	2,965	6.36	5,068	10.88	15,741	33.78
Charlotte	913	3,935	4.31	10,223	11.20	30,021	32.88
Nashville	1,050	5,150	4.90	12,571	11.97	33,879	32.27
Jacksonville	1,052	5,311	5.05	7,868	7.48	32,813	31.19
Orlando	1,414	5,706	4.04	5,873	4.15	43,691	30.90
Chattanooga	371	2,436	6.57	3,209	8.65	11,233	30.28
Richmond	947	4,963	5.24	9,007	9.51	26,709	28.20
Columbia	464	2,327	5.02	5,361	11.55	13,042	28.11
Atlanta	4,548	19,879	4.37	40,669	8.94	127,008	27.93
Tampa-St. Petersburg	2,326	9,629	4.14	11,863	5.10	62,865	27.03
Louisville	955	4,361	4.57	11,145	11.67	24,870	26.04
Memphis	1,042	3,917	3.76	6,681	6.41	25,974	24.93
Huntsville	224	1,307	5.83	885	3.95	5,492	24.52

Source: Federal Highway Administration: Highway Statistics 2008.

employees to the Helena and Pelham areas in Shelby County. While these data show need for economic development in the NB corridor, they do not support the expenditure of \$4.7 billion on this highway. The metropolitan regions that have experienced sustained, robust growth (both business and residential) create endogenous demand for additional highway capacity. The Northern Beltline proponents are ignoring the fact that corridor growth trends do not merit the need for a 6-lane highway.

### Schools

School quality is a critical variable in family relocation decisions. The Brookings Institute estimates that housing costs an average 2.4 times as much near a high scoring public school than near a low scoring public school.<sup>45</sup> Blueprint Birmingham repeatedly stresses the point that Birmingham is not improving its competitive position with regards to educational attain-

ment. This limits the types of businesses that are attracted to the region. The education attainment levels in northern Jefferson County communities are lower than in southern Birmingham or Shelby County.

The 2012 Reevaluation acknowledges the importance of school quality on where development may or may not go:

In order to produce more refined development forecasts, variables like amount of available, buildable land acreage, crime statistics, school system quality and so forth would need to be applied to each TAZ (Transportation Analysis Zone). The results of the transportation land use gravity model is therefore best considered a depiction of where the “pressure” for development may occur as a result of new transportation capacity additions, not an exact forecast of development.<sup>46</sup>

These variables were not included in the CBER

Table 11

**Change in Business Establishments and Employees 1998-2009**

Location	Number of Establishments			Number of Employees		
	2009	1998	Change	2009	1998	Change
35020 Bessemer (NB)	534	629	-95	6,259	10,002	-3,743
35173 Trussville (NB)	563	411	152	6,140	7,091	-951
35216 Hoover	1,027	1,155	-128	13,483	14,326	-843
35217 Tarrant (NB)	368	457	-89	9,390	10,178	-788
35023 Hueytown (NB)	426	447	-21	4,933	5,460	-527
35005 Adamsville (NB)	90	125	-35	593	1,061	-468
35127 Pleasant Grove (NB)	74	114	-40	736	1,185	-449
35073 Graysville (NB)	45	63	-18	371	572	-201
35226 Hoover	413	416	-3	3,400	3,579	-179
35224 Minor (NB)	45	44	1	481	552	-71
35214 Forestdale (NB)	247	289	-42	4,574	4,397	177
35080 Helena (Shelby)	219	143	76	2,373	1,547	826
35124 Pelham (Shelby)	1,081	891	190	14,219	11,997	2,222
35244 Indian Springs (Shelby)	1,325	1,064	261	29,570	22,528	7,042
35242 Meadow Brook/Lake Purdy	1,408	775	633	21,090	12,051	9,039

Source: US Census Bureau. County Business Patterns. 2009, 1998

analysis. Yet, the CBER stated the following: “Combined with the population forecasts, the economic forecasts suggest a workforce constraint to economic development for Jefferson County and the state. In-commuting for work is likely to intensify unless worker productivity rises faster than forecast” (p. 13). The workforce constraint referenced in the report is education, and the perceived quality of schools in the NB corridor could ultimately limit future economic development opportunities.

Municipalities near the NB are largely served by Jefferson County Public Schools. Areas like Trussville that have relatively high performing public schools have experienced impressive population growth between 2000 and 2010, without the NB. Other smaller municipalities that do not have independent school districts have not experienced much population growth. Again, it is notable that the city of Bessemer, which is strategically located between I-20 and I-459, has not grown. In fact, it lost 2,216 residents despite its location near the existing I-459 beltline. Furthermore, representa-

tives of the Regional Planning Commission predicted that the NB will also not change development patterns in Bessemer.<sup>47</sup> Again, the point of this analysis is only to suggest redirection of the substantial taxpayer investment in the NB to other projects that are more likely to bring positive economic growth to Bessemer and other communities in the corridor.

### Environmental Justice

The CBER report includes a section on environmental justice that ignores the biggest environmental justice population in Birmingham—inner-city neighborhoods surrounded by vacated, contaminated properties. The NB will not facilitate the redevelopment of any community environmental liabilities into community assets. Simply stated, there are no environmental justice benefits created by the NB. Some project proponents have argued that the NB will lessen air pollution by easing congestion. However, as mentioned before, the congestion mitigation benefits of the beltline are minimal.

The CBER report claims the following:

“The benefits of the NB make it very valuable to lower income and more diverse corridor block groups because of its provision of job opportunities and improved access to essential services and activities. To the extent that project-related and subsequent development jobs go to local residents of these block groups, the new highway will lower the poverty rate.”

Yet, there are no mechanisms in place to guarantee that any of the job opportunities would go to unemployed, impoverished Birmingham residents. The most impoverished groups in the region live in inner-city neighborhoods far removed from the NB. Mass transit does not reliably link inner-city neighborhoods to the NB corridor. And, if the project accelerates urban flight to the suburbs, the beltline would further exacerbate economic injustice issues in Birmingham’s core.

### Overlooking a Downtown Spur Alternative

The City of Birmingham and Jefferson County appear not to have systematically pursued funds for the assessment and remediation of sites along the corridor that could connect I-22 (an existing Appalachian Development Highway corridor) past I-65 and into I-20/59 near the city’s airport. This route is only two to three miles long and could accommodate traffic between Atlanta and Montgomery with reduced congestion at the so-called Malfunction Junction of I-65 and I-20/59. ALDOT’s past chief engineer, Don Vaughn, has said that, “We looked at that years ago. But you get into a heavy industrial area with contaminated materials and we could not get through there. If we stir it up, we clean it up, and there is too much through there.”<sup>48</sup>

Since that time, liability and cleanup standards have changed.<sup>49</sup> The extent to which newer environmental standards permit contaminated soils that are disturbed to be put back on site if capped (which a roadway would do) has never been considered. As noted earlier, the real cost to the state for the \$4.7 billion NB in terms of opportunities foregone is over \$1 billion. That sum should be sufficient to remediate a 2- to 3-mile corridor across some contaminated sites if the majority of the soils would not require removal, which they no longer do under Risk-Based Corrective Action approaches that are now the national standard. The entire cleanup and construction project, more-

over, could be accomplished in a much shorter period of time than the NB.

This strategy could provide a host of benefits to the people of Birmingham, Jefferson County and the region. A road spur that would significantly reduce traffic at known congestion bottlenecks that are predicted to become more so over time, would save commuters, residents and businesses the time and economic cost of traffic jams. A speedier and shorter route for major truck traffic through Birmingham could add to the area’s economic activity and employment in warehousing and transportation. Remediation and control of existing pollution problems and risk exposures to residents would directly add to the economic competitiveness and community health of areas with brownfields. In addition, property values for sites adjacent to the road could make private sector brownfields cleanups economically viable and promote new business development in the central city. This report does not necessarily endorse such an alternative, which would need thorough review and cost-benefit analysis to insure protection of the environment and existing neighborhoods and businesses. But pursuit of the NB while ignoring alternatives such as this is not a prudent use of limited taxpayer dollars.

Any integrated planning effort should consider at least consider alternatives investments like this that could provide a greater bang for the taxpayer buck. Yet there is no evidence that any Alabama government body has attempted to do a systematic assessment of the site conditions and pricing of the pollution cleanup costs along the possible downtown corridors.

The EPA Brownfields grants process is strongly biased in favor of grants that contribute to environmental justice. Yet, as Appendix C demonstrates, Birmingham has not received an assessment grant since 1995. The only public sector grantee in the county since the passage of the 2002 Brownfields Bill that expanded funds availability has been the Jefferson County Economic and Industrial Development Authority that secured \$200,000 for a small cleanup.

It appears that no effort has gone into getting readily available federal funds for data collection on the economic feasibility of a shorter alternative to the NB.

# The Northern Beltline's Questionable Transportation Benefits

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The Northern Beltline is only nominally a transportation project. A roadway user benefit calculation comparing a given project to alternatives is a standard practice of transportation planning. A glaring omission in the CBER report is the lack of any analysis at all of the NB's transportation costs and benefits. The standards for such analysis are well established by transportation agencies. According to the Minnesota Department of Transportation, for example:

The primary transportation-related elements that can be monetized are travel time costs, vehicle operating costs, safety costs, ongoing maintenance costs, and remaining capital value (a combination of capital expenditure and salvage value). For some kinds of projects, such as bypasses, travel times and safety may improve, but operating costs may increase due to longer travel distances. A properly conducted benefit-cost analysis would indicate whether travel time and safety savings exceed the costs of design, construction, and the long-term increased operating costs.<sup>50</sup>

The CBER report and the 2012 Reevaluation did not conduct any such user benefit calculations.

A \$4.7 billion investment during an era of fiscal constraint should require rigorous cost-benefit analysis. No such study was conducted. In the appendix of the report, the CBER acknowledges that methodologies other than their approach could have been used to measure the NB's costs and benefits. They even note that econometric models, economic base models and computable general equilibrium models typically result in smaller economic multipliers than their chosen methodology of input-output modeling (p. 30). The more sophisticated methodologies are dismissed because they are more complex, time-consuming and expensive. This conclusion ignores a core problem evident in both the CBER report and the 2012 ALDOT Reevaluation study—a taxpayer investment of

the magnitude of \$4.7 billion should require the most rigorous cost-benefit analysis available.

The 1997 Final Environmental Impact Statement (FEIS) included a highway user benefit calculation, but the model used 1990 baseline data. At that time the NB was envisioned to be a 4-lane road. The passage of 15 years, the availability of 2010 census data, and the revised plan to build a 6-lane highway (with contemplated future expansion to 8 lanes), not to mention extensive evidence on reduced vehicle miles traveled per capita that were already becoming available before 2010, should have been incorporated into revised a highway user benefit calculation.

The traffic volumes predicted for the NB in the 1997 FEIS do not merit a 6-lane highway, let alone a planned 8-lane highway. As the 1997 FEIS admitted, "The analysis indicated a four-lane cross-section should be sufficient to handle the 2010 projected volumes, based upon the socio-economic data currently projected for the area."<sup>51</sup> No additional transportation capacity studies have been conducted to justify the expansion to 6 or more lanes.

One potential explanation for not conducting a highway user benefit calculation is that the NB will provide few transportation benefits. The transportation demand management measures are used for peak hour travel. "As indicated in the analyses, the Beltline will primarily serve nonwork trips that typically occur throughout the day and have minimal impact during the peak hours."<sup>52</sup> If this is true, the NB will provide meager peak hour congestion relief and little economic impact.

The March 2012 ALDOT Reevaluation confirms that the transportation benefits of the NB are small. It projects average annual daily traffic (AADT) volumes from about 35,000 to 45,000 depending upon the segment of the road. Projected traffic volumes are higher

in northeastern sections of the NB near Trussville. By comparison, in 2010 AADT on I-459 ranged from a low of 44,000 near Bessemer to a high of 103,930 near Hoover.<sup>53</sup> The projected traffic volumes for the NB are extremely low for a 6-lane highway. This is an incredibly inefficient use of public funds for the U.S., state, and region.

# Conclusion

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This report shows that the CBER's limited analysis of the economic impacts of the NB project is flawed. The number of construction-related jobs that would be generated is misleading, counting year-long positions as permanent jobs. The number of net new post-construction jobs in the NB corridor is incredibly small for a \$4.7 billion economic development project. As this report suggests, the true cost of the NB is likely much higher than the road budget itself. The cost per job is extremely high and the hidden costs associated with the project are largely ignored by the CBER report. Ultimately, residents of Alabama, the Birmingham region, Jefferson County, and the NB corridor will likely pay for the NB through additional sewer taxes and fees, fuel taxes, and higher congestion.

Many of the talking points of NB supporters have been shown to be exaggerated. The relationship between the presence of beltlines and economic development is not conclusive. In fact, the likelihood of a highway investment driving economic activity is highly dependent upon the presence of needed infrastructure and residential/business demand. These precursors to development are absent in the NB corridor. In addition, the CBER analysis ignores critical variables associated with economic growth such as school quality, crime, and the availability of developable land in northern Jefferson County. The topography along the corridor is a hindrance to large scale development opportunities.

As a transportation project, the NB provides marginal benefits. The Birmingham Metropolitan Planning Organization concluded that the NB will not have a major impact on regional congestion. As a matter of fact, 35 other transportation projects in the region were deemed to be better candidates for development than the NB. The merits of the transportation benefits aside, an up to date highway user analysis that quantifies the benefits of the NB has not been completed. This is standard procedure for transportation projects and should accompany any cost/benefit analysis.

Prior to starting a process that could ultimately cost more than \$4.7 billion, the most comprehensive, sophisticated cost/benefit analysis available to decision makers should be undertaken for this project and alternative investments. The CBER report is not an adequate substitute for such an analysis. The fact is that the proposed NB will not come close to producing the economic benefits that are claimed by its proponents.

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# Endnotes

<sup>1</sup> Ahituv, Abner and Robert Lerman. *Job Turnover, Wage Rates, and Marital Stability: How Are They Related?* <[http://www.urban.org/uploadedPDF/411148\\_job\\_turnover.pdf](http://www.urban.org/uploadedPDF/411148_job_turnover.pdf)> accessed May 20, 2012.

<sup>2</sup> See <[http://www.bea.gov/papers/pdf/WP\\_IOMIA\\_RIMSII\\_020612.pdf](http://www.bea.gov/papers/pdf/WP_IOMIA_RIMSII_020612.pdf)> accessed April 18, 2012.

<sup>3</sup> U.S. Department of Transportation, Federal Highway Administration. *Employment Impacts of Highway Infrastructure Investment*. <<http://www.fhwa.dot.gov/policy/otps/pubs/impacts/index.htm>> accessed April 15, 2012.

<sup>4</sup> This is actually a bit of a high-end estimate. Given that a significant proportion of the construction materials and supplies for the job are likely to come from outside the state, there would be still more jobs created nation-wide in producing and delivering needed supplies. If the non-Alabama jobs amount to only 5% of those predicted to be generated in-state, that would add 3,477 jobs to those projected for Alabama, or a total of 73,012 jobs nation-wide. That is almost 14% more jobs than the national average.

<sup>5</sup> Cambridge Systematics. 2008. *Economic Impact Study of Completing the Appalachian Development Highway System*. Tables 6.9 and 6.10, p. 6-10. That study noted its source for projecting high construction materials cost increases (footnote 18, p. 6-3): “The Bureau of Labor Statistics’ bridge and highway construction producer price index (BHWY PPI) grew by 35.3 percent from 2003 to 2006, equivalent to 10.6 percent per year.” <[http://www.arc.gov/assets/research\\_reports/EconomicImpactStudyofCompletingADHS.pdf](http://www.arc.gov/assets/research_reports/EconomicImpactStudyofCompletingADHS.pdf)> accessed April 17, 2012. Other available sources included Levine, L. 2009. *Job Loss and Infrastructure Job Creation During the Recession*. Washington, DC: US Congressional Research Service, March 17, p. 7. <<http://fpc.state.gov/documents/organization/122480.pdf>> accessed April 17, 2012. Also: Delaware, Department of Transportation. ND. *Employment Impacts of Highway Infrastructure Investment*. p. 2. <[http://deldot.gov/information/projects/recovery/tiger\\_fund\\_apps/sr1\\_i95/documents/FHWA\\_EmploymentImpacts\\_jobscreation.pdf](http://deldot.gov/information/projects/recovery/tiger_fund_apps/sr1_i95/documents/FHWA_EmploymentImpacts_jobscreation.pdf)> accessed April 17, 2012.

<sup>6</sup> U.S. Department of Transportation, Federal Highway Administration. *Op. cit.*, endnote 3.

<sup>7</sup> U.S. Department of Transportation, Office of Inspector General. *Growth In Highway Construction And Maintenance Costs*. Federal Highway Administration Report Number: CR-2007-079, issued September 26, 2007. <<http://www.oig.dot.gov/library-item/4515>> accessed April 16, 2012. The cost of asphalt and other road components is tied to world petroleum prices, which continue to trend up. Steel production itself is related to energy prices as well, even if less directly to oil costs.

<sup>8</sup> Gray, Jeremy. *Construction contract awarded for final link of Corridor X*. The Birmingham News, June 16, 2010. <[http://blog.al.com/spotnews/2010/06/construction\\_contract\\_awarded.html](http://blog.al.com/spotnews/2010/06/construction_contract_awarded.html)> accessed April 28, 2012.

<sup>9</sup> When it comes to assessing overall impacts, this analysis uses the 17-year timeline employed as a possibility in the CBER study since the shorter time to completion produces the highest current benefits of a completed road to Alabama, the metro, the county and the NB corridor itself. This assures that any criticism of the effectiveness of the project will be based on the most positive future trends in benefits as described by the CBER.

<sup>10</sup> There will, of course, be some new jobs appearing along the corridor that serve the construction workers (food trucks and the like), but such activity moves around the metropolitan area and declines in one district if there is no construction there as it grows in another where construction workers are present. There are *no net new jobs* associated with that type of activity.

<sup>11</sup> Sher, David. *Can Our Suburbs Survive if Birmingham is a Donut Hole?* Al.com. May 15, 2012. <[http://blog.al.com/comebacktown/2012/05/can\\_our\\_suburbs\\_survive\\_if\\_bir.html](http://blog.al.com/comebacktown/2012/05/can_our_suburbs_survive_if_bir.html)> accessed May 15, 2012.

<sup>12</sup> Fulmer, Melinda. *America’s Top 10 Shrinking Cities*. MSN Real Estate. <<http://realestate.msn.com/slideshow.aspx?cp-documentid=25991046>> accessed May 27, 2012.

<sup>13</sup> Final Environmental Impact Statement (FEIS) Reevaluation. Project HPP-1602 (530)(529)(502)(531)(532). Birmingham Northern Beltline. Appendices K-O. <<http://aldotapps.dot.state.al.us/BNB/BNBMarch292012Reevaluation.html>> accessed April 27, 2012.

<sup>14</sup> Not considering the probability that the preferred outcome will occur is less than 1—that an undesirable result will occur—is simply unacceptable in impact analysis.

<sup>15</sup> Spencer, Thomas. *Questions persist as Northern Beltline construction proceeds*. The Birmingham News. April 15, 2012. <[http://blog.al.com/spotnews/2012/04/questions\\_persist\\_as\\_northern.html](http://blog.al.com/spotnews/2012/04/questions_persist_as_northern.html)> accessed April 16, 2012.

<sup>16</sup> Because much of the employment generated will only develop more than 17 years in the future, it is appropriate to discount those jobs relative to the employment generated by construction in this year or the next. The CBER study did not discount the value of future jobs, so its current estimate of employment and earnings decades from now is overstated.

<sup>17</sup> March 2012 Reevaluation. Appendix M. Williams, Voketz, Morrison and Richardson. Jefferson County Planning Department. <<http://aldotapps.dot.state.al.us/BNB/>> accessed April 17, 2012.

<sup>18</sup> C.f.: Friedmann, R. 1981. *The Reliability of Policy Recommendations and Forecasts from Linear Econometric Models*. *International Economic Review*. XXII(2): 415-428 for some of the issues involved in forecast reliability.

<sup>19</sup> Reedy, E.J. and Robert E. Litan. *Starting Smaller, Staying Smaller: America’s Slow Leak in Job Creation*. Kauffman Foundation Research Series: Firm Foundation and Economic Growth. <[http://www.kauffman.org/uploadedFiles/job\\_leaks\\_starting\\_smaller\\_study.pdf](http://www.kauffman.org/uploadedFiles/job_leaks_starting_smaller_study.pdf)> accessed June 5, 2012.

<sup>20</sup> This 0.9% figure is actually a high-end measure. Since there was no CBER forecast of the total number of businesses in the county in 2040, the 372 new firms reported to be generated by the NB were taken as a percentage of the 37,961 firms reported to be in the county in 2009 (CBER Table 1, p. 6). By 2040 the number of firms in the county may be expected to grow so the percentage of new firms may be an even smaller number.

<sup>21</sup> Scott Armstrong has been in the forefront of criticism of reliance on the forecasting accuracy of econometric methods since the 1980s, and his work continues to dominate thinking today. See, Armstrong, J. S. 1985. *Long-Range Forecasting: From Crystal Ball to Computer*. New York: John Wiley. For a more accessible discussion, available on-line, see Armstrong, J.S. 1999. Forecasting for Environmental Decision Making. Pp. 192-255 in Dale, V.H. Dale, and M.E. English, eds., *Tools to Aid Environmental Decision Making*. New York: Springer-Verlag. At <[http://upenn.academia.edu/JArmstrong/Papers/1124901/Forecasting\\_for\\_Environmental\\_Decision-Making](http://upenn.academia.edu/JArmstrong/Papers/1124901/Forecasting_for_Environmental_Decision-Making)>. A more recent, albeit arcane, contribution attests to the continuing questioning of the results of econometric forecast models as time progresses: Phillips, P.C. B. 2005. Challenges of trending time series econometrics. *Mathematics and Computers in Simulation* LXVII(5-6): 401-416.

<sup>22</sup> C.f. Meyer. Peter B., Thomas S. Lyons and Tara L. Clapp. 2000. *Projecting Environmental Trends from Economic Forecasts*. Burlington, VT: Ashgate Publishing. Pp. 87-91.

- <sup>23</sup> Regional Planning Commission of Greater Birmingham. 2011. *FY2012-2015 Transportation Improvement Program*. Birmingham, AL: Birmingham Metropolitan Planning Organization
- <sup>24</sup> Discounting both monetized and non-monetized costs and benefits has been an accepted requirement of cost benefit and policy analysis for decades. C.f.: Arrow, K.J. 1970. Uncertainty and Evaluation of Public Investment Decisions. *American Economic Review*. LX(3): 364-378; Gramlich, E.M. 1990. *A Guide to Cost Benefit Analysis*. 2nd. Edition. Esp. Chpt 6, "Benefits and Costs Realized at Different Times." Englewood Cliffs, NJ: Prentice-Hall; Lichfield, N. 1996. *Community Impact Analysis*. London: Taylor and Francis Books; Yewlett, C. 2005. Issues in Transportation Multi-Modal Choice. Pp. 45-62 in Miller, D., and D. Patassini, eds. *Beyond Cost-Benefit Analysis: Accounting for Non-Market Values in Planning Evaluation*. Aldershot, UK: Ashgate.
- <sup>25</sup> Cambridge Systematics. 2008. *Op.cit.*, Endnote 5. Tables 6.9 and 6.10, p. 6-10. The ARC-funded study used both a 7% and a 5% discount rate.
- <sup>26</sup> Spencer. *Questions Persist .... Op. cit.* Endnote 15.
- <sup>27</sup> Spencer. *Questions Persist .... Op. cit.* Endnote 15.
- <sup>28</sup> Albemarle Comprehensive Pedestrian Plan. Sample Cost Estimates. <[http://www.ncdot.gov/bikeped/download/bikeped\\_planning\\_albemarle\\_AppendixE.pdf](http://www.ncdot.gov/bikeped/download/bikeped_planning_albemarle_AppendixE.pdf)> accessed June 8, 2011.
- <sup>29</sup> *Rough Roads Ahead: Fix Them Now or Pay for Them Later*. American Association of State Highway Transportation Officials (AASHTO). <[http://roughroads.transportation.org/RoughRoads\\_FullReport.pdf](http://roughroads.transportation.org/RoughRoads_FullReport.pdf)> accessed May 7, 2012.
- <sup>30</sup> Shoup, Lilly, Nick Donohue, and Marisa Lang. *The Fix We're In: The State of Alabama's Bridges*. Transportation for America. <<http://t4america.org/docs/bridgereport/states/bridgereport-al.pdf>> accessed April 29, 2012.
- <sup>31</sup> Schrank, David, Tim Lomax, and Bill Eisele. *TTI's 2011 Urban Mobility Report*. <<http://tti.tamu.edu/documents/mobility-report-2011.pdf>> accessed May 15, 2012.
- <sup>32</sup> *Central Indiana Suburban Transportation and Mobility Study: Peer Cities Review*. 2003. <[http://www.in.gov/indot/files/Mobility\\_Peer\\_Review.pdf](http://www.in.gov/indot/files/Mobility_Peer_Review.pdf)> accessed May 2, 2012.
- <sup>33</sup> *Rough Roads Ahead .... Op. cit.* Endnote 29.
- <sup>34</sup> Clarke, Wes, Warren Brown, and Matt Hauer. *The Motor Use Fuel Tax in Georgia: Collection Efficiency, Trends, and Projections*. Carl Vinson Institute of Government, The University of Georgia. December 2012. <<http://www.cviog.uga.edu/free-downloads/motor-use-fuel-tax.pdf>> accessed May 1, 2012.
- <sup>35</sup> National Highway Transportation Safety Administration. *President Obama Announces Historic 54.5 mpg Fuel Efficiency Standard*. July 29, 2011. <<http://www.nhtsa.gov/About+NHTSA/Press+Releases/2011/President+Obama+Announces+Historic+54.5+mpg+Fuel+Efficiency+Standard>> accessed May 12, 2012.
- <sup>36</sup> Congressional Budget Office. *How Would Proposed Fuel Economy Standards Affect the Highway Trust Fund?* May 2, 2012. <<http://www.cbo.gov/publication/43198>> accessed May 12, 2012.
- <sup>37</sup> Research and Innovative Technology Administration. The Bureau of Transportation Statistics. Table 5-3: Highway Vehicle-miles Traveled (VMT): 2004, 2009. <[http://www.bts.gov/publications/state\\_transportation\\_statistics/state\\_transportation\\_statistics\\_2010/html/table\\_05\\_03.html](http://www.bts.gov/publications/state_transportation_statistics/state_transportation_statistics_2010/html/table_05_03.html)> accessed April 17, 2012.
- <sup>38</sup> The Business Alliance for Responsible Development. What Have They Been Up to Lately? <<http://bardonline.org/content.asp?id=271308>> accessed April 24, 2012.
- <sup>39</sup> Collins, Margaret and Glen Weisbrod. *Economic Impact of Freeway Bypass Routes in Medium Size Cities*. Economic Development Research Group. September 2000. <<http://www.edrgroup.com/pdf/Urban-Freeway-Bypass-Case-Studies.pdf>> accessed May 6, 2012.
- <sup>40</sup> David Hartgen. *Beltlines, Traffic and Sprawl: The Empirical Evidence 1990-97*. University of North Carolina at Charlotte, 2000.
- <sup>41</sup> Louisville-Southern Indiana Ohio River Bridges Project. Supplemental Environmental Impact Statement. 2012. <[ftp://content.kyinbridges.com/SFEIS/SFEIS%20entire%20document.pdf](http://content.kyinbridges.com/SFEIS/SFEIS%20entire%20document.pdf)> accessed May 27, 2012.
- <sup>42</sup> Transportation Projects Impact Case Study. US Strategic Highway Research Program. <<http://transportationforcommunities.com/t-pics/#app=19ba&87c3-selectedIndex=0&511-selectedIndex=0>> accessed May 27, 2011.
- <sup>43</sup> Southern Connector Toll Road Homepage. Bankruptcy Filing. <<http://www.southernconnector.com/Zbankruptcy.htm>> accessed May 13, 2012.
- <sup>44</sup> Hartgen, David and Dan Curley. *Beltlines, Traffic and Sprawl: The Empirical Evidence 1990-97*. University of North Carolina at Charlotte, 2000.
- <sup>45</sup> Rothwell, Jonathan. *Housing Costs, Zoning, and access to High-Scoring Schools*. Metropolitan Policy Program at Brookings. April 2012. <[http://www.brookings.edu/~/media/Files/rc/papers/2012/0419\\_school\\_inequality\\_rothwell/0419\\_school\\_inequality\\_rothwell.pdf](http://www.brookings.edu/~/media/Files/rc/papers/2012/0419_school_inequality_rothwell/0419_school_inequality_rothwell.pdf)> accessed April 24, 2012.
- <sup>46</sup> *Final Environmental .... Op. cit.* Endnote 13.
- <sup>47</sup> *Final Environmental .... Op. cit.* Endnote 13.
- <sup>48</sup> Spencer. *Questions Persist .... Op. cit.* Endnote 15.
- <sup>49</sup> The US Department of Environmental Protection. Brownfields and Land Revitalization: Laws and Statutes. <<http://www.epa.gov/brownfields/laws/index.htm>> accessed June 1, 2012.
- <sup>50</sup> The Minnesota Department of Transportation. *Benefit/Cost Analysis for Transportation Projects*. <<http://www.dot.state.mn.us/planning/program/benefitcost.html>> accessed May 24, 2012.
- <sup>51</sup> Alabama Department of Transportation. 1997 Final Environmental Impact Statement, 2-16. <<http://aldotapps.dot.state.al.us/BNB/>> accessed April 24, 2012.
- <sup>52</sup> Alabama Department of Transportation. 1997 Final Environmental Impact Statement, 2-5. <<http://aldotapps.dot.state.al.us/BNB/>> accessed April 24, 2012.
- <sup>53</sup> Alabama Department of Transportation. <<http://aldotgis.dot.state.al.us/atd/default.aspx>> accessed May 29, 2012.

# Appendix A: Technical Notes

## Construction Labor Supply

If the CBER predictions came to pass, there would be a disruptive demand pressure on the supply of workers skilled in the specialty area of “Heavy and Civil Engineering Construction” (HCEC) as a result of the new road. Table A-1 demonstrates the limited supply of workers in the Birmingham-Hoover Metropolitan Area prepared to go directly to work on the NB construction sites.

As of early 2012, there were only 4,016 workers in the metropolitan area employed in heavy and civil engineering construction, the type of jobs associated with road-building. Assuming that this subsector of the labor market was suffering a 20% unemployment

rate, that would mean that there were only 1,004 other people available for work on the NB that had previous experience and sought jobs like those involved in the road project. That is fewer people unemployed in the sector than the 1,352 likely to be needed according to our calculations about job-years of work demanded for the NB, using the revised Federal Highway Administration employment projections, so the heavy construction labor market might become tight and favor workers seeking higher pay. However, since there will be a ramp up process as the project begins (which the CBER allowed for in its calculations), the additional 381 workers could be found for the road job without adverse effects on other ongoing infrastructure construction projects

Table A-1

### Road Construction Worker Labor Supply in 2012

Employees in Nonagricultural Industries in Alabama	March 2012 Thousands	February 2012 Thousands	March 2011 Thousands	Average Thousands	Average as Percent of Total
Construction	72.9	71.6	81.1	75.2	1.00
Construction of Buildings	16.2	16.2	17.9	16.8	0.22
Heavy and Civil Engineering Construction	12.9	12.5	15.6	13.7	0.18
Specialty Trade Contractors	43.8	42.9	47.6	44.8	0.60
Nonagricultural Wage and Salary Employment for Alabama Metropolitan Areas: Birmingham-Hoover MA					
Construction	21,000	21,400	23,900	22,100	
Heavy and Civil Engineering Construction (*)				4,016	

Sources: Top panel, state data, from <<http://www2.dir.state.al.us/ces/Nonag.pdf>>; bottom panel, metro data from <<http://www2.dir.state.al.us/ces/MSA/Birmingham.pdf>>, both downloaded 5/9/12.  
 (\*) Calculated from Metro total assuming State proportion of 18% of total construction employment applies in the Metro as well.

## Discounting

The standard discounting formula for a cost or benefit in a future year is:

$$PV = FVt/(1+d)t$$

Where:

PV, or present value, is the value at time = 0

FV, or future value, is the value at time = t

d is the discount rate

t is the number of years in the future that the future value will be received

The sum of a stream of benefits or costs arising in future years is thus:

$$PV = \sum FVt/(1+d)t$$

Where the sum,  $\Sigma$ , is taken over the period from t=0, the current year, through t=T, the end year of the stream.

### Discounting to get the value today of a job created decades from now

The present value of a job is different from the present value of money in some essential ways. There are social

Table A-2

### Employment and Earnings by Year, Northern Beltline at \$4.7 Billion Cost

Project Year	Calendar Year	Alabama		Birmingham Metro		Jefferson County	
		New Jobs	Earnings Millions	New Jobs	Earnings Millions	New Jobs	Earnings Millions
0	2012	1,302	\$41.90	1,222	\$39.10	734	\$23.60
1	2013	4,014	\$129.20	3,768	\$120.60	2,262	\$72.60
2	2014	4,014	\$129.20	3,768	\$120.60	2,262	\$72.60
3	2015	4,014	\$129.20	3,768	\$120.60	2,262	\$72.60
4	2016	4,014	\$129.20	3,768	\$120.60	2,262	\$72.60
5	2017	4,014	\$129.20	3,768	\$120.60	2,262	\$72.60
6	2018	4,014	\$129.20	3,768	\$120.60	2,262	\$72.60
7	2019	4,014	\$129.20	3,768	\$120.60	2,262	\$72.60
8	2020	4,014	\$129.20	3,768	\$120.60	2,262	\$72.60
9	2021	4,014	\$129.20	3,768	\$120.60	2,262	\$72.60
10	2022	4,014	\$129.20	3,768	\$120.60	2,262	\$72.60
11	2023	4,014	\$129.20	3,768	\$120.60	2,262	\$72.60
12	2024	4,014	\$129.20	3,768	\$120.60	2,262	\$72.60
13	2025	4,014	\$129.20	3,768	\$120.60	2,262	\$72.60
14	2026	4,014	\$129.20	3,768	\$120.60	2,262	\$72.60
15	2027	4,014	\$129.20	3,768	\$120.60	2,262	\$72.60
16	2028	4,014	\$129.20	3,768	\$120.60	2,262	\$72.60
17	2029	4,014	\$129.20	3,768	\$120.60	2,262	\$72.60
Permanent	2030	20,641	\$664.50	19,377	\$620.40	11,635	\$373.60
<b>Average Year-long Jobs During Road Construction</b>		3,863		3,627		2,177	
<b>Total Permanent Jobs</b>		24,504		23,004		13,812	

Source: CBER Analysis. Years 2012-2029 are from Table 10, p. 19; Permanent jobs are from Table 12, p. 22.

benefits that accrue—family stability, individual sense of well-being and worth, and the like—that are difficult to quantify. Unlike income, which tends to go to individuals and be disposed of (spent or saved) by them, the social benefits of employment may accrue to whole communities. Community benefits such as greater stability, lower crime rates and less social tension may be difficult to count, but they still can be discounted in principle the same way that future cash flows get discounted. The job creation data associated with the NB in the CBER analysis need to be discounted to estimate the present value of a stream of future employment.

Table A-2 shows the actual pattern of the jobs—and incomes—created over time by the NB according to the CBER study. The data are derived from the findings associated with an accelerated construction schedule of 17 years so as to offer as conservative a measure as possible of the possible loss of value associated with job creation delays. Thus, the Year 0, or 2012, new jobs and earnings come from the CBER's calculation for the start-up period and the Year 1 to 17 in the figures come from the active construction projections. The numbers here are identical to those in Table 10 of the CBER study; however, separate rows for each of the years of construction have been created to make the delay obvious—and to permit discounting by different amounts on each year.

The last three lines in the Table require some explanation. The “Permanent” line in the Table contains the original CBER estimates of post-construction jobs. Even if increased fuel efficiency of vehicles could hold down emissions from additional vehicles, there has been no evidence presented that the expansion of the NB from four lanes to six will, in fact, generate additional economic activity. Therefore, the conservative approach is to assume that it will not.

The “average person-years of work” that the CBER projected would be generated in each of the years of the construction project, including the start-up year. Because each of those person-years of work will be available for 17 years, the annual employment is considered as providing “permanent-equivalent” jobs. Adding that number to the actual permanent jobs predicted by the CBER leads to the 24,503 total jobs estimate for Alabama and the other bottom line figures.

Table A-2 could have been constructed with the projected total person-years of work now defined as the appropriate expectation of employment by the

Federal Highway Administration (FHWA), that is the more up to date figure of 2,805 person-years of work each construction year, rather than 4,014. The CBER numbers that the NB advocates have been circulating in the state, MSA and county are used for illustrative purposes, simply because the data are more familiar. Either set of data would need to be discounted.

The value in 2012 of a job in 2012 or 2015 relative to one in 2030 involves discounting two features of employment, the earnings and the social benefits. The CBER report discounts future earnings in its income projections by assuming the same income per job generated over the entire construction period (see the constant numbers in the construction years under “Earnings” in Table A-2).

By keeping the wage number constant, the CBER analysis has assumed that the percentage increase in wages in each future year would be at a rate that exactly equaled the sum of the inflation rate, rate of time preference, and an allowance for uncertainty. This assumption is empirically false: wages are not indexed for inflation, that time preferences shift with the age structure of a population, and uncertainty cannot, by definition, be considered to be constant.

Even though earnings have been discounted by this CBER approach, the social benefits of the jobs themselves also need to be discounted to arrive at a current-year-equivalent job in terms of impacts on social well-being. Lower unemployment contributes to reduced crime, drug abuse and other social problems, and those benefits generate dollar savings to society, not just a “feel good” effect, so delaying them arguably costs money today.

We discounted using the conservative 5% discount rate accepted by the Appalachian Regional Commission (ARC) in assessing the economic impact of its highway system. The jobs in Table A-1 are adjusted to their “present value” in Table A-3.

Each job in Table A-3 is adjusted from Table A-2 for the fact that the value of the benefit gained in any future year is discounted to be present by reducing it by 5% for each year of delay until the benefit is realized. That is, the Year 0 entries are not discounted at all, while the Year 1 entries and all that follow are adjusted for the delay. The post-construction benefit of 20,641 new Alabama jobs and the related income and job impacts in the MSA and county is discounted for

only an 18-year delay, even though the ongoing benefit of those jobs should be discounted for each subsequent year that they last. (A year 19 job is worth less than one in year 18 and so on, and those permanent jobs extend into the future.)

Even though Table A-3 discounts the NB project's future jobs benefit conservatively, the results can still be used to arrive at an estimate of the present value of the jobs created. The present value of the post-construction jobs is the third-to-last line in the Table. The present value of the one-year construction and spin-off jobs is

the average of all the discounted annual jobs created from Years 0 through 17, providing a figure that can be treated as the 2012 permanent-equivalent jobs generated in the construction project. We add that number to the post-construction discounted jobs to arrive at the total 2012-equivalent jobs that will be generated once the project is completed.

The relevant present value of jobs figure for all of Alabama thus is 11,163. This is the sum of the discounted post-construction jobs, 8,577 and the average of the annual figures in the third column of Table A-3.

Table A-3

**Present Value of Employment and Earnings by Year, \$4.7 Billion NB**

Project Year	Calendar Year	Alabama		Birmingham Metro		Jefferson County	
		New Jobs	Earnings Millions	New Jobs	Earnings Millions	New Jobs	Earnings Millions
0	2012	1,302	\$41.90	1,222	\$39.10	734	\$23.60
1	2013	3,823	\$123.05	3,589	\$114.86	2,154	\$69.14
2	2014	3,641	\$117.19	3,418	\$109.39	2,052	\$65.85
3	2015	3,467	\$111.61	3,255	\$104.18	1,954	\$62.71
4	2016	3,302	\$106.29	3,100	\$99.22	1,861	\$59.73
5	2017	3,145	\$101.23	2,952	\$94.49	1,772	\$56.88
6	2018	2,995	\$96.41	2,812	\$89.99	1,688	\$54.18
7	2019	2,853	\$91.82	2,678	\$85.71	1,608	\$51.60
8	2020	2,717	\$87.45	2,550	\$81.63	1,531	\$49.14
9	2021	2,587	\$83.28	2,429	\$77.74	1,458	\$46.80
10	2022	2,464	\$79.32	2,313	\$74.04	1,389	\$44.57
11	2023	2,347	\$75.54	2,203	\$70.51	1,323	\$42.45
12	2024	2,235	\$71.94	2,098	\$67.15	1,260	\$40.43
13	2025	2,129	\$68.52	1,998	\$63.96	1,200	\$38.50
14	2026	2,027	\$65.25	1,903	\$60.91	1,142	\$36.67
15	2027	1,931	\$62.15	1,812	\$58.01	1,088	\$34.92
16	2028	1,839	\$59.19	1,726	\$55.25	1,036	\$33.26
17	2029	1,751	\$56.37	1,644	\$52.62	987	\$31.68
<b>Average 2012-Equivalent Year-Long Jobs During Road Construction</b>		3,863		3,627		2,177	
<b>Total 2012-Equivalent Jobs Once Project Is Completed</b>		24,504		23,004		13,812	

Source: Table A-1, with data for the years after Year 0 modified by the standard discounting formula using a 5% discount rate.

Using the adjusted FHWA estimates for job generation per \$1 billion in federal expenditure—2,805 instead of 4,014, person-years of work for the 17-year construction period in Table A-2—the discounted jobs figure falls to 10,406 for the state.

Both these present value calculations exaggerate the benefits. They overstate the PV of the permanent jobs (“After” in the Tables) since they do not discount the job benefits more for the employment occurring in the years after the completion of the NB. They treat the benefits of the Nth year of permanent post-construction employment as having the same PV as those arising in the first year. This results in an even more conservative discounting process, overstating PV.

Using the CBER’s “worst case” construction delay scenario of a 30-year instead of a 17-year construction schedule, combined with the FHWA total job generation forecast, the discounted jobs can be calculated by extending Table A-2 and A-3 to cover 30 years. In that case the PV of jobs created would total only 5,377.

This lower PV of employment results from the small number of person years of work generated each year when the construction process is spread out over 30 years, combined with a 30-year delay in getting the benefits of the post-construction employment projected by the CBER. It underscores the importance of the construction schedule and that the benefits to Alabama, the Birmingham MSA and Jefferson County are likely to shrink to a level that does not warrant the costs as the process gets delayed by budget constraints.

### **Discounting to Get the Present Value of the Spending on the NB**

The principle of discounting needs to be applied to the costs of a project the same way it is used to derive the present value of its benefits. Thus, we need to calculate the PV for the stream of expenditures on the NB the same way we discounted the benefits.

The discounted costs of constructing the NB will depend on how long it takes to build. The longer the construction period, the further in the future monies will be spent and the lower the present value of the discounted stream of future spending.

Table A-4 derives the PV of the stream of spending for a 17 year and a 30 year construction schedule. We see the \$4.7 billion total expenditure drop to \$3.146 or \$2.452 respectively, based on the spending pattern projected in the CBER analysis.

Table A-4

**Present Value of Spending on the Northern Beltline**

Cost in \$ Millions

Year	17-Year Schedule			30-Year Schedule		
	CBER	\$4.7 B	PV	CBER	\$4.7 B	PV
0	\$57	\$88	\$88	\$57	\$88	\$88
1	\$176	\$271	\$258	\$100	\$154	\$146
2	\$176	\$271	\$246	\$100	\$154	\$139
3	\$176	\$271	\$234	\$100	\$154	\$133
4	\$176	\$271	\$223	\$100	\$154	\$127
5	\$176	\$271	\$213	\$100	\$154	\$120
6	\$176	\$271	\$202	\$100	\$154	\$115
7	\$176	\$271	\$193	\$100	\$154	\$109
8	\$176	\$271	\$184	\$100	\$154	\$104
9	\$176	\$271	\$175	\$100	\$154	\$99
10	\$176	\$271	\$167	\$100	\$154	\$94
11	\$176	\$271	\$159	\$100	\$154	\$90
12	\$176	\$271	\$151	\$100	\$154	\$86
13	\$176	\$271	\$144	\$100	\$154	\$82
14	\$176	\$271	\$137	\$100	\$154	\$78
15	\$176	\$271	\$130	\$100	\$154	\$74
16	\$176	\$271	\$124	\$100	\$154	\$70
17	\$176	\$271	\$118	\$100	\$154	\$67
18	–	–	–	\$100	\$154	\$64
19	–	–	–	\$100	\$154	\$61
20	–	–	–	\$100	\$154	\$58
21	–	–	–	\$100	\$154	\$55
22	–	–	–	\$100	\$154	\$53
23	–	–	–	\$100	\$154	\$50
24	–	–	–	\$100	\$154	\$48
25	–	–	–	\$100	\$154	\$45
26	–	–	–	\$100	\$154	\$43
27	–	–	–	\$100	\$154	\$41
28	–	–	–	\$100	\$154	\$39
29	–	–	–	\$100	\$154	\$37
30	–	–	–	\$100	\$154	\$36
<b>PV</b>	<b>\$3,044</b>	<b>\$4,700</b>	<b>\$3,146</b>	<b>\$3,045</b>	<b>\$4,701</b>	<b>\$2,452</b>

Sources: Cols 2 & 5: CBER Analysis, Tables 10 and 9 (p. 19). Cols 3 & 6 derived based on total cost difference (\$4.7 B / \$3.044 B). Cols 4, 7 derived from Cols 3, 6, 8 using discount formula with  $d=0.05$ . (Rounding errors in truncated budget numbers account for the \$1 million rise in PV totals in columns 5 & 6 relative to columns 1 & 2).

# Appendix B: Impact of New Fuel Efficiency Standards on Fuel Tax Revenues

Changes in fleet mileage standards will place further pressures on fuel tax revenues over the next several decades. The following scenario uses 2009 vehicle miles traveled estimates for Alabama to illustrate how increased fuel efficiency could affect nominal revenues accruing to the Alabama Department of Transportation in the future (assuming the Alabama fuel tax is not increased). These projections do not factor in the impact of inflation on the purchasing power of future revenues.

Overall, the data suggest that the Alabama Department of Transportation will be constrained in its ability to fund new roads, meet maintenance needs, and repair crumbling road and bridge infrastructure. Building additional new highways will exacerbate this funding problem and increase pressure on legislators to increase the Alabama fuel tax.

Table B-1

## Relationships Between Fuel Efficiency and Gas Tax Revenue in Alabama

Auto/Light Truck Standards	MPG	VMT*	Gallons of Gasoline	Nominal Revenue
Through 2015	21.8	56,061,000,000	2,571,605,505	\$475,747,018
2016-2024	34.5	58,864,050,000	1,706,204,348	\$315,647,804
After 2025	54.5	61,807,252,500	1,134,078,028	\$209,804,435

\*Assumes 5% increase in VMT for period with 34.5 mpg and 54.5 mpg calculations.

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# Appendix C: Brownfield Grants

The table below lists all the brownfield grants from the Environmental Protection Agency received in Alabama since the EPA started making grants to promote site cleanup in 1992.

Table C-1

## Brownfield Grant Fact Sheet

Grant Recipient Name	Grant Type	Announce Year (FY)	Hazardous Funding	Petroleum Funding	Job Training Funding	Pilot Funding
AL Department of Environmental Management	Revolving Loan Fund	2002	-	-	-	\$1,000,000
AL Department of Environmental Management	Assessment	2010	-	\$200,000	-	-
City of Anniston	Assessment	2001	-	-	-	\$200,000
City of Anniston	Job Training	2004	-	-	\$161,000	-
City of Anniston	Cleanup	2007	\$200,000	-	-	-
City of Anniston	Job Training	2008	-	-	\$200,000	-
City of Birmingham	Assessment	1995	-	-	-	\$350,000
City of Birmingham	Revolving Loan Fund	1997	-	-	-	\$500,000
Black Warrior-Cahaba Rivers Land Trust	Assessment	2004	\$200,000	-	-	-
City of Cordova	Assessment	2007	-	\$200,000	-	-
City of Cullman	Cleanup	2011	\$200,000	-	-	-
City of Decatur	Assessment	2012	\$200,000	\$200,000	-	-
City of Florence	Assessment	2008	\$200,000	\$200,000	-	-
Freshwater Land Trust	Assessment	2007	\$200,000	-	-	-
Freshwater Land Trust	Assessment	2010	-	\$200,000	-	-
City of Guin	Assessment	2004	\$200,000	-	-	-
Jefferson Economic and Industrial Development Authority	Cleanup	2009	\$200,000	-	-	-
City of Mobile	Assessment	2009	\$200,000	\$200,000	-	-
Montgomery	Assessment	2001	-	-	-	\$200,000
Prichard	Assessment	1996	-	-	-	\$100,000
City of Prichard	Assessment	2011	\$200,000	\$200,000	-	-
City of Selma	Assessment	2001	-	-	-	\$200,000
City of Selma	Assessment	2006	\$200,000	-	-	-
City of Talladega	Assessment	2009	\$200,000	\$200,000	-	-
City of Talladega	Assessment	2012	\$200,000	\$200,000	-	-
City of Tarrant	Cleanup	2006	\$200,000	-	-	-
City of Tuscaloosa	Assessment	2006	-	\$200,000	-	-
Uniontown	Assessment	1998	-	-	-	\$200,000
City of Valley	Assessment	2007	-	\$200,000	-	-
City of Valley	Cleanup	2008	-	\$235,000	-	-
City of Valley	Cleanup	2011	\$165,000	-	-	-

Source: US Environmental Protection Agency, 2012. Brownfields Grant Fact Sheet Search. Data for the State of Alabama. Extracted from [http://cfpub.epa.gov/bf\\_fact-sheets/index.cfm](http://cfpub.epa.gov/bf_fact-sheets/index.cfm) using search criteria "State=Alabama / Grant Type=All / Grant Announcement Year=All".

