



**Work Proposal – ACEC-SC Infrastructure Works Institute (IWI)**

This proposal outlines the scope of work that the Division of Research (DOR) will complete for IWI. All work outlined will be completed by Joseph Von Nessen (PI) and Douglas Woodward (Co-PI) – both Ph.D. economists in the DOR with expertise in regional economics and regional economic forecasting.

The Division of Research in the Darla Moore School of Business regularly conducts a wide variety of economic impact analyses and market forecasts at the national, state, and local levels to provide objective and actionable information for policymakers regarding economic and market conditions as well as to document the important contributions of various businesses, non-profits, and other organizations to their local communities.

**Scope of Work**

In recent years the United States has experienced a significant increase in federal commitments towards infrastructure maintenance and expansion. Largely facilitated through the Infrastructure Investment and Jobs Acts (IIJA) and the American Rescue Plan Act (ARPA), this federal funding (and the accompanying state-level funding commitments) is now providing South Carolina with the potential to generate sizable and permanent economic gains.

Such funding will not only introduce new capital investment throughout South Carolina and support new jobs and incomes for local residents during the construction itself – but these dollars will be invested in infrastructure projects that have the potential to increase productivity and long-run rates of economic growth as a result. For example, expansions to road, bridge, and port infrastructure can directly boost the productivity of transportation-based firms in South Carolina by providing faster and more efficient access to their various customer bases.

The purpose of this study is to specifically document both the temporary and permanent economic impacts associated with the IIJA and ARPA funds that will likely arise in South Carolina – at the county level – as these dollars are spent and infrastructure is improved in the coming years.

*Phase I: Temporary Impacts from Construction-Related Activities*

The economic impact of any new construction activity within a local region ultimately derives from increases in construction-related spending on both labor and materials. These direct increases in economic activity, in turn, then lead to a series of economic multiplier effects. For example, when a construction firm purchases goods and services from one of its local vendors, this vendor experiences an increase in demand. To satisfy this demand, the vendor must then hire additional

workers and increase purchasing activity from its own set of suppliers. These suppliers then experience an increase in demand, and so on.

Thus, the initial dollars that are spent by the construction firm are re-spent over and over again throughout a local supplier network. A similar effect occurs when the suppliers hire new workers to satisfy their increase in demand. These new workers spend part of their incomes in the local economy, thereby increasing the demand for suppliers for a variety of goods and services (such as food, entertainment, or housing). Once again, the initial payroll dollars are re-spent multiple times in the region. Collectively, these subsequent rounds of spending are known as the economic multiplier effect. This effect makes the initial impact of the local expenditures by the construction firm far larger.

In order to estimate the total economic impact of all construction-related spending that takes place with IJJA and ARPA funds allocated to South Carolina, the process by which these funds are spent within South Carolina must first be determined. IJJA and ARPA funds are processed through various state agencies, and as such, this study will work with these agencies to assess the spending patterns of these federal funds. More specifically, the DOR (in conjunction with IWI) will collect data from the S.C. Department of Transportation (DOT), the S.C. Department of Health and Environmental Control (DHEC), and the S.C. Rural Infrastructure Authority (RIA) that details all project expenditures that derive from IJJA and ARPA funds. These data will then be used by the DOR to estimate all temporary economic impacts as outlined above.<sup>1</sup>

#### *Phase II: Permanent Impacts from Productivity Gains*

Although all of the economic impacts documented in Phase I would be temporary, one-time effects, any productivity benefits that businesses derive from improved infrastructure capacity would likely generate a permanent increase in economic activity for South Carolina and its local regions. Phase II of this research effort will begin by estimating the annual rate of new private capital investment that South Carolina will likely experience through 2035 at the county level. These projections will be based on historical capital investment data maintained by the S.C. Department of Commerce (Commerce) and economic forecasting models maintained by the DOR. These projections, in turn, will then serve as the basis for estimating the increase in total economic output (GDP) that can be expected as a result of all new business activity having access to improved infrastructure capacity. In other words, Phase II will estimate the increase in economic activity that will arise from the increased productivity generated by better state and local infrastructure capacity.

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<sup>1</sup> Note that the DOR and IWI are actively pursuing additional state agencies to partner with (who also receive IJJA and ARPA funding) and that the three listed agencies represent the *minimum* number of agencies from whom data will be collected for this study. To the extent that additional agency partners are included, this will not affect the total cost of this project nor the project timeline.

### *Methodology*

In order to estimate the total impact (direct, indirect, and induced) from a given initial increase in expenditure activity (direct), economic input-output models are used. In this study, input-output models will be tailored with specific parameters that represent the state of South Carolina and all 46 counties, which are based on the estimated dynamic relationships of over 500 industry categories.

Direct, indirect, and induced economic impacts will be reported for estimates of employment (job creation), labor income, and overall economic output (GDP). Once these impacts are estimated, specific employment, income, and output multipliers can be derived. These multipliers will highlight the total additional gains in economic activity associated with Phases I and II. The input-output modeling software *IMPLAN* will be used in conjunction with proprietary economic models to derive and quantify all economic relationships detailed in the final report.

### **Data Requirements**

In order to complete this research effort, the research team must be provided appropriate data to be used as necessary inputs for all economic models. The DOR will require, at minimum, data on all project expenditures being made by DOT, DHEC, and RIA through the year 2035 that derive from IIJA and ARPA funds broken down by:

- Project type and description (including county of project location)
- Expenditure category
- Date or date range of purchase
- County of purchase

These data will be used by the DOR to estimate all economic impacts as outlined above. ***Note that while the DOR will provide specific data templates that can be used to formally request all required data for this research effort, it will be the responsibility of IWI to contact and solicit all required data from DOT, DHEC, and RIA on behalf of the DOR and to follow up as necessary to ensure that these data are collected and delivered to the DOR. IIJA and ARPA funding data that are not provided to the DOR by IWI will not be included in the analysis or any results provided in the final report.***