

Economic Contribution of Colorado State University Construction Projects

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Introduction

Colorado State University is an important economic driver for the state, and one of the nation's leading Universities. Each year the university generates hundreds of millions of dollars in research funding in a variety of established and emerging fields, ranging from atmospheric sciences to zoology. This has led to myriad discoveries, such as improved wheat varieties, increased battery storage and anti-malaria innovations that benefit people across the state and around the world.

At the same time, CSU's improving academic reputation and its commitment to affordable and accessible education has led to a fast-growing student population. CSU is the state's largest educator of first-generation students, and continues to increase its retention and graduation rates.

Although the university is thriving on nearly every metric, its success has put immense pressures on existing and aging facilities. This creates a need for updated infrastructure and new facilities. Over the past 5 years CSU has undertaken a significant capital improvement effort to revitalize and modernize the Fort Collins campus. While the primary goal of such efforts are to position the university as a preeminent environment for student learning and faculty discovery, it is important to also recognize that facility and infrastructure improvements have impacts on the community beyond creating a better campus. In particular, jobs and wages provided by the capital projects have provided important economic benefits to people living across Colorado.

In this study we examine the contributions of Colorado State University construction spending on Colorado using an economic and fiscal impact model developed specifically for the state. Our analysis focuses on spending related to the following multi-year CSU construction projects:

- Chemistry Building
- Medical Center
- Parking Garages
- Aggie Village
- Biology Building
- Stadium

The impacts of campus construction spending can be broken into two components. *Direct* contributions arise from the actual spending on the construction projects. Here, we consider the jobs and tax revenues created by nearly \$560 million in additional construction spending on both materials and labor. This ranges from site planning, to architecture, to building materials to construction labor.

But the construction spending also has *indirect* effects in the state. These include the subsequent purchases facilitated statewide due to the effects of construction employee spending and supplier purchases. In summary, we look at a variety of economic contributions including industry-level employment and output in order to demonstrate how CSU construction spending supports economic activity in the state of Colorado. In addition to employment, our model allows us to also examine some of the fiscal effects of construction spending statewide. For example, we examine how economic activity related to the construction spending affects sales and property tax revenues in the state.

Key Findings

- Combined direct spending on 6 projects totaled nearly \$560 million over the past 30 months. Twenty four percent of these expenditures went to project management fees and 76% went to constructions costs in the form of labor and materials
- Average yearly expenditures equaled \$221.6 million dollars per year
- The average yearly expenditures translate into the following yearly economic contributions from CSU construction spending:
 - \$270 million per year in economic activity
 - 3,602 average yearly jobs persisting for 2.5 years
 - \$17.6 million in tax revenue to the state of Colorado in each year
 - \$190 million in Colorado household income each year
- Individual analysis was conducted for the three largest projects and their individual contributions to the Colorado economy are as follows:
 - The Stadium – the economic contribution of the Stadium includes an average of \$133 million per year in economic activity and 1,758 jobs per year for the over 2-year construction period
 - Aggie Village – the economic contribution of Aggie Village includes an average of \$94.6 million per year in economic activity and 1,259 jobs per year during the 1.5-year construction period
 - Medical Center – the economic contribution of the Medical Center includes an average of \$48 million per year in economic activity and 650 jobs per year during its almost 1.5-year construction period

Data and Methodology

Construction on campus is overseen and managed by Facilities Management, which keeps detailed records on project timelines and costs. To create our construction scenarios for the model we use aggregated expenditure data compiled from these records for each project. Because employment estimates due to construction are central to our analysis, we validate our work in two ways. First, we compare it to previous, similar construction studies that provide estimates of the number of jobs each \$1 million in spending creates. In relationship to these past studies, our estimates are on the conservative side. Additionally, because various phases of construction require different numbers of workers at

different times, we worked closely with Facilities Management to determine the “employment trajectory” for each project. Specifically, we smooth out spending and employment across high- and low- points over the construction cycle to develop average annual employment, which are the values we report in this study. Using employment estimates, expenditure data, and project timelines, we calculate that over the last 2.5 years CSU construction expenditures have averaged \$221.6 million dollars a year. We use the yearly average expenditures to calculate the economic contributions to the economy of CSU construction expenditures, thus it is important to note that the contributions are yearly contributions that have persisted for 2.5 years (Spanning from late 2014 to mid-2017).

The Construction expenditures made by CSU support the Colorado economy through direct expenditures as well as job creation. Additionally, the direct construction expenditures are used to purchase goods and services from other vendors across the state of Colorado, which supports additional spending and jobs. The additional economic activities generated from CSU construction spending are referred to as multiplier effects, as initial (direct) spending is multiplied into larger total contributions.

Construction spending data provided by facilities management as described above is used to calculate the yearly economic contributions of CSU using a computable general equilibrium model (CGE) of the Colorado Economy. CGE models are one of the preferred tools for regional impact and contribution analysis because they are founded in microeconomic theory, with outcomes driven by resource allocation decisions of utility maximizing households and profit maximizing firms. The contributions that we are primarily interested in for this analysis are total employment, tax revenue, household income, and total output.

Results

This analysis looks at the economic contribution of spending related to the following six multi-year CSU construction projects:

- Chemistry Building
- Medical Center (Nov 2015 – April 2017)
- Two parking garages (June 2015 – Oct 2016)
- Aggie Village (Dec 2014 – June 2016)
- Biology Building (Sept 2015 – June 2017)
- Stadium (July 2015 – August 2017)

Combined over the life of the projects these projects accounted for almost \$560 million in expenditures. Of the \$560 million in expenditures 24% went to project management fees and costs while the other 76% went to construction costs in the form of labor and materials. This distinction is important as these two types of expenditures will move through the economy differently, and are treated differently in the CGE model. The timelines for the projects spanned over an approximately 2.5 year time period, starting in late 2014 and ending mid-2017. Average yearly expenditures equaled \$221.6 million. Using our model

we calculate the associated multiplier effects associated with these expenditures. It is important to note that the calculated economic contributions are yearly contributions that persist for about 2.5 years in the Colorado economy. When accounting for the multiplier effects the \$221.6 million in yearly spending equates to \$270 million in yearly economic activity in the state of Colorado.

Overall, we find that CSU construction spending supported an average of 3,602 jobs per year in the Colorado economy, both directly and indirectly, during the construction phases. Related economic activity from the construction spending provided approximately \$17.6 million in tax revenue to the state. In addition, the construction spending supports approximately \$190 million in household income to the state of Colorado.

In addition to aggregate economic activity generated from construction projects we also broke up the individual economic contributions of the three largest construction projects: the Stadium, Aggie Village, and the Medical Center. During its 2-year construction period the Stadium created \$133.3 million in economic activity, and around 1,758 jobs per year. The economic activity generated by the stadium also produced approximately \$8.7 million in state tax revenues and \$94 million in household income to the state of Colorado. Aggie Village created \$94.6 million dollars in economic activity and 1,259 jobs per year during its 1.5-year construction period. In addition, Aggie Village contributed \$6.2 million in Colorado tax revenues and \$67 million in household income. Lastly, we looked at the new campus Medical Center, which contributed \$48 million in economic activity and 650 jobs per year during its almost 1.5-year construction period. It also contributed \$3.2 million in Colorado tax revenues and \$34 million dollars per year to household income in the state.

Summary

This report outlines the contributions of CSU spending on 6 large construction projects on the Colorado economy. Project timelines have spanned the last 2.5 years and average yearly expenditures were \$21.6 million. Through what is called the multiplier affects these dollars created additional economic activity in Colorado of \$270 million dollars per year and supported 3,602 jobs per year.

It is important to note that this report only quantifies the economic contributions of six capital projects: the chemistry building, medical center, parking garages, aggie village, biology building and the stadium. We do not account for spending and contributions of other CSU capital projects. In addition, this analysis does not account for continuing contributions to the Colorado economy that could come in the future from the operations, maintenance and other economic activity that could be derived from the use of these buildings.