Economic Consequences of Building the Black Hills Energy Power Plant in Pueblo County with a Project Labor Agreement

Study conducted by

The Healy Center for Business and Economic Research,

Colorado State University-Pueblo,

June 10, 2010

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Executive Summary

This study examines the economic consequences of building the Black Hills Energy natural gas-fired power plant with a project labor agreement (PLA). The academic research on the costs of project labor agreements is discussed. The study also examines the economic impact on Pueblo County if the project were built with and without a PLA. The results of the study are summarized below.

Benefits of a Project Labor Agreement: The construction of the $450 million Black Hills Energy facility is expected to employ approximately 400 construction workers at the peak of building, but is expected to require a total of approximately 600 workers from start to finish. A PLA would emphasize the employment of local workers, but current local construction labor supply is insufficient to meet this demand. It is estimated that with a PLA, 75 percent of the work (450 jobs) would be completed by local workers. The results of an economic impact analysis indicate that as 450 local construction workers spend a portion of their income in the local retail and service sectors, an additional 170 local jobs will be created. Therefore, the total increase in local jobs associated with a PLA project is approximately 620. If this project is completed without a PLA, it is expected that 25% of the work (150 jobs) would be completed by local construction workers. Economic impact results indicate that as these workers spend a portion of their income in Pueblo, an additional 57 retail and service jobs will be created. So, without a PLA, employment will increase by about 207 jobs. To put these figures in perspective, it is helpful to estimate how the Pueblo unemployment rate would change under the different PLA scenarios. While time is required for the impacts to work their way through the economy, the local unemployment rate (for April) of 8.9 percent would decrease to about 8.0% with the creation of 620 PLA-related jobs. On the other hand, the local unemployment rate would fall to about 8.6 percent with a non-PLA project. Other economic impact results indicate that if the Black Hills facility is built with a PLA, local economic activity would increase by approximately $18.6 million. This increase in economic activity is associated with an increase in tax revenue collected by the city of approximately $232,000 and $66,000 in sales taxes collected by the county. The total increase in local sales tax revenue associated with a PLA project is approximately $300,000. If the project is not built with a PLA, local economic activity would increase by about $6.2 million. The increase in tax revenue collected by the city would be about $77,000 and $22,000 for the county. Table 2 (page12) lists the top 15 local retail and service sectors that are affected by the local spending of construction workers. Restaurants and the broadly defined retail sector would experience an employment increase of about 58 jobs with a PLA and about 18 jobs without a PLA.

Costs of Project Labor Agreements: Several studies report that project labor agreements are associated with higher construction costs. For example, the construction consulting firm of Rider Levett and Bucknall estimates that building the Veterans Affairs facility in Denver would be approximately 5.8 percent more costly if the project were built under a PLA. However, the results of this study are based on opinion. It is not based on construction cost data and appropriate statistical analysis. An exception to the opinion-based research is the often-referenced study by the Beacon Hill Institute of Suffolk University that uses data on public school construction in New York state and statistical analysis to find that projects built under PLAs are approximately 20 percent higher than projects that were not constructed with PLAs.

However, a replication of this study by Bellman et. al., that includes more information on the complexity of the school projects, indicates that there is no cost difference between PLA and non-PLA projects. Consequently, claims that PLAs are associated with higher construction costs are not supported by the most comprehensive and complete research in this field. Other research conducted by the author of this report indicates that when contractors are confronted with higher wage rates, the productivity of construction increases in a way as to offset pressure on the total cost of construction.

Concluding Comments: The construction of the Black Hills facility will have an impact on the local economy as local materials and construction labor are used to build this facility. Since many of the materials used in the building of the facility will be purchased outside of Pueblo County, much of the impact depends on how many resident construction workers are employed and how much of their income is spent in the county. Since PLAs are associated with the employment of more construction workers from the area, this policy would be effective in maximizing the economic benefit associated with the construction of the power plant. The best research on the subject indicates that PLAs are not associated with higher construction costs. This suggests that the benefits to the Pueblo economy of a PLA project will exceed the costs.

About the Author:

Kevin Duncan, Ph.D. is Professor of Economics and Senior Economists for the Healy Center for Business and Economic Research at Colorado State University-Pueblo. He is a nationally recognized expert on prevailing wage laws, has published in the leading international journal on construction economics and management, and has provided expert testimony to the Colorado and Hawaii state legislatures on policy related to construction labor markets. He has also provided data and analysis to the Legislative Auditors Office during the review of Minnesota's prevailing wage law. In addition to research on construction labor markets, Professor Duncan has conducted numerous local economic impact studies including studies of the Colorado State Fair, CSU-Pueblo, Pueblo Nonprofits, and the proposed Amendment 61. Professor Duncan has been the recipient of numerous excellence awards at CSU-Pueblo including the Provost's Award for Excellence in Teaching, the Provost's Award for Excellence in Research, the Outstanding Faculty Member Award for the Hasan School of Business, as well as the Enterprise Rent-A-Car Student Choice Award for Excellence in Teaching.

Characteristics of Project Labor Agreements

Project labor agreements (PLAs) are pre-hire collective barging agreements that establish employment conditions and terms on a construction project. The agreement is typically negotiated between a local building trades council and a representative of the project owner. This arrangement differs from the typical collective bargaining process in construction where craft unions bargain separately with contractors or contractor associations on wages and other terms of employment. Once the agreement is made, all union and nonunion contractors employed on the project must adhere to the agreement.

PLAs can be particularly attractive arrangements on large projects that extend over one year, when project completion and scheduling are important, or when there is a need for a steady supply of skilled construction workers. The needs of a large project with a tight schedule typically involve concessions by unions where work conditions and terms are coordinated across the trades. Work hours, holidays and other policies (drug testing, etc.) are also coordinated to minimize work disruptions. No-strike clauses are also a typical component of PLAs. These agreements usually incorporate the local collectively bargained compensation rates. This latter feature often gives rise to a concern over the cost implications of PLAs.

Costs of Project Labor Agreements

Several studies present evidence that PLAs are associated with higher construction costs. For example, Rider Levett Bucknall (2010) report that a PLA would add approximately 5.8 percent to the cost of building the Veterans Affairs facility in Denver. However, the findings of this study are based on opinion and are not based on the usual quantitative or statistical methods that allow for rigorous testing of the varied economic factors that determine the costs of PLA

versus non-PLA projects.[1] Similarly, the study by Haughey (2010) also claims that PLAs add to construction costs, but does not provide empirical analysis and data to substantiate this claim.[2] The exceptions to the opinion-based research on the cost implications of PLAs are several studies by the Beacon Hill Institute of Suffolk University. For example, Bachman and Tuerck (2006) use construction cost data for New York public schools and statistical testing to report that those projects covered by PLAs are approximately 20% more expensive than projects not covered by PLAs.[3] However, Bellman, Ormiston, Schriver, and Kelso replicate the study by Bachman and Tuerck and demonstrate that the previous results regarding the association between PLAs and construction costs loses statistical significance when other project complexities are taken into account.[4] Specifically, Bellman et. al find that when other detailed project features, that are also associated with higher building costs, are considered, the cost difference between PLA and non-PLA projects is no longer significant in a statistical sense. Consequently, claims

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[1] For a more complete criticism of the opinion-based method and findings reported in Rider, Levett, and Buchnall, See Duncan (2010) "Review of RLB| Rider Levett Bucknall ReportProject Labor Agreements – Denver Update For the Department of Veterans Affairs Washington, DC: http://www.buildingtrades.org/files/Documents/RiderLevettBucknailReportReview.aspx

[2] See Haughey (2010), "Project Labor Agreements will raise federal construction costs,." http://www.reedconstructiondata.com/jim-haughey/post/project-labor-agreements-will-raise-federal-construction-costs/

3 See Bachman and Tuerck (2006), "Project Labor Agreements and Public Construction Costs in New York State." http://www.beaconhill.org/BHIStudies/PLA2006/NYPLAReport0605.pdf. For other studies by Beacon Hill Institute researchers see Tuerck, Glassman, and Bachman (2009) "Project Labor Agreements on Federal Construction Projects: A Costly Solution in Search of a Problem." http://www.beaconhill.org/BHIStudies/PLA2009/PLAFinal090923.pdf and Tuerck (2010) "Why Project Labor Agreements are Not in the Public Interest." CATO Journal, Vol. 3, No. 1, Winter, 2010, pp.45-65. However, none of these studies includes the statistical complexity of the study by Bellman, et al.

4 See Bellman et al, "The Effect of Project Labor Agreements on the Cost of School Construction." http://web.mit.edu/ipc/sloan05/Belman-Ormiston.pdf.

that PLAs are associated with higher construction costs are not supported by the most comprehensive and complete research in the field.

The total cost of construction may not increase with an increase is wage rates for several reasons related to construction worker productivity. For example, nonunion contractors may employ only the most productive workers on jobs requiring higher wage rates, or contractors may also use more equipment to replace some of the tasks performed by expensive labor. Research by Duncan, Phillips and Prus (2006, 2009) provides evidence that construction productivity increases when contractors face higher wage requirements in ways that offset the impact on total construction costs.[5]

Benefits of Project Labor Agreements

Since PLAs are negotiated with local trade union councils, these agreements result in the employment of more construction workers from the affected area. When local construction workers are employed on a local project, economic activity in the area increases as these workers spend a portion of their income in local retail and service industries. In this sense, there is an economic impact on the Pueblo economy associated with the construction of the Black Hills facility. An activity has an economic impact if it draws, or attracts "new dollars" into a region. When these funds are spent within the region, additional economic activity takes place. For example, with the construction of the Black Hills facility in Pueblo, local economic activity is directly affected as building begins and local construction workers are employed. Local economic activity is also indirectly influenced as construction supplies are purchased. Additional economic activity is induced as newly employed construction workers spend a

[5] See Duncan, K., Philips, P., and Prus, M. (2006). Prevailing Wage Legislation and Public School Construction Efficiency: A Stochastic Frontier Approach. *Construction Management and Economics*, 24, 625-634, Duncan, K. Philips, P. and Prus, M. (2009). The Effect of Prevailing Wage Regulations on Construction Efficiency in British Columbia. *International Journal of Construction Education and Research*, 5, 63-70.

portion of their income in the local retail and service sectors. This process is often referred to as a "ripple effect" where the initial stimulus to a local economy (the direct spending effect of the construction project in this case) is multiplied as additional local rounds of spending, income, and job creation take place. Because of the ripple effect, the total impact of building the Black Hills facility on the local economy will be larger than the initial amount of the cost of this project. The following sections of this report illustrate the benefit of building the Black Hills facility by measuring the economic impact of this activity on the Pueblo economy

IMPLAN Input-Output Software and Data

This economic impact study uses the IMPLAN software and data for Pueblo County to estimate the ripple, or multiplier, effect of building the Black Hills facility. IMPLAN (IMpact analysis for PLANning) was originally developed by the U.S. Department of Agriculture to assist the Forest Service with land and resource management planning. The Minnesota IMPLAN Group (MIG) started work on the model and data in the mid-1980s at the University of Minnesota. The software was privatized in 1993 and made available for public use. The software contains an input-output model with data available at the zip-code, county, state, and national levels.

Input-output analysis measures the inter-industry relationships within an economy. Specifically, input-output analysis is a means of measuring the monetary, or market, transactions between businesses and between businesses and consumers. This framework allows for the examination of a change in one sector on the entire economy. In this way, input-output analysis is able to measure the multiplier, or ripple, effect as an initial change in one industry stimulates further changes in transactions between other businesses and households. In addition to capturing market transactions within an economy, IMPLAN also measures social accounting, or

non-market flows, such as tax payments by individuals and businesses, government transfers, and transfers between individuals. The benefit of these social accounts is the estimation of federal, state, and local taxes associated with an economic impact. Specifically, IMPLAN provides estimates of total state and local taxes from employee compensation, indirect business taxes (sales, property, etc.), households (income, property, motor vehicle, etc.) and corporations (dividends and profits). The IMPLAN tax estimates are combined with information and data from the Colorado Department of Revenue to provide estimates of changes in city and county-level sales taxes that are associated with the construction impact. The results are reported in 2010 dollars.

Black Hills Energy Project and Employment Data

The Black Hills Energy natural gas-fired power plant project is estimated to cost $450 million and to require 18 month to complete. Construction employment on the project is expected to peak at 400 workers, but will require about 600 construction workers from start to finish. Current local labor supply conditions do not allow for all work to be completed by area construction workers. It is estimated that with a PLA, 75 percent of the work would be completed by local workers. In the absence of a PLA there is no guarantee that a high percentage of the work will be completed by local construction workers. It is assumed that 25 percent of work will be performed by area construction workers in the absence of a PLA.

The economic impact analysis is not based on the total impact associated with building the Black Hills facility, but on the induced impact associated with the local spending of construction worker income. Data from the 2007 Economic Census of Construction are used to estimate the percent of total costs that are represented by labor costs. Labor cost estimates are

further adjusted for the percent of local employment under the different PLA scenarios. The impact is based on these estimates of labor income.

Economic Impact Results

The data reported in Table I indicate that if the Black Hills facility is built with a PLA, the local spending of construction workers will add approximately $18.5 million to the Pueblo economy. This increase in economic activity is associated with an additional 170 local service and retail sector jobs. The increase in local economic activity is also associated with an increase in tax revenue collected by the city of approximately $232,000. Tax revenue collected by the county will increase by about $66,000. The total increase in local sales taxes, if the project is completed with a PLA will be about $300,000. If the project is completed without a PLA, local economic activity will increase by about $6.2 million. Local retail and service sector employment will increase by approximately 57 jobs. City tax revenue will increase by about $77,000 and county tax revenue will increase by approximately $22,000. The total increase in local tax revenue is expected to be about $100,000.

Table 1
Impact of Building the Black Hills Power Plant with 75 Percent and 25 Percent Local Construction Workers: Impact on Pueblo County Economic Activity, Employment and Sales Tax Revenue

Percent Local Construction Workers	Total Economic Impact	Employment Impact	City and County Sales Tax Impact
75 Percent Local Construction Workers	$18,557,000	170 Jobs	City: $232,000 County: $66,000 Total: $298,000
25 Percent Local Construction Workers	$6,186,000	57 Jobs	City: $77,000 County: $22,000 Total: $99,000

Source: IMPLAN. Results reported in 2010 dollars

It is estimated that with a PLA, 75 percent of the work (450 jobs) would be completed by local workers. The results of the economic impact analysis indicate that as 450 local construction workers spend a portion of their income in the local retail and service sectors, an additional 170 local jobs will be created. Therefore, the total increase in local jobs associated with a PLA project is approximately 620. If this project is completed without a PLA, it is expected that 25% of the work would be completed by local construction workers. Economic impact results indicate that as these workers spend a portion of their income in Pueblo, an additional 57 retail and service jobs will be created. So, without a PLA, employment will increase by about 207 jobs. To put these figures in perspective, it is helpful to estimate how the Pueblo unemployment rate would change under the different PLA scenarios. While time is required for the impacts to work their way through the economy, the local unemployment rate (for April) of 8.9 percent would decrease to about 8.0% with the creation of 620 PLA-related jobs. On the other hand, the local unemployment rate would fall to about 8.6 percent with a non-PLA project.

Table 2 reports the employment impact for the top 15 local retail and service industries that are affected by the local spending of construction workers. If the project is completed under a PLA, 170 jobs will be created. While the employment effect is spread over the economy, the broadly defined retail sector and restaurants would experience a disproportionate increase of about 58 jobs. If the project is completed without a PLA, total job creation is approximately 57 jobs. Employment in the broadly defined retail and service sectors would be about 18 jobs.

Table 2
Employment Detailed Impact of the Building Black Hills Power Plant with 75 Percent and 25 Percent Local Construction Workers: Impact on Top 15 Local Industries.

Pueblo County Industry	**Employment Gain with 75 Percent Local Construction Workers**	**Employment Gain with 25 Percent Local Construction Workers**
Total	169.5	56.5
Food services and drinking places	19.8	6.6
Offices of physicians, dentists, and other health practitioners	15	5
Private hospitals	13.4	4.5
Retail Stores - General merchandise	9.7	3.2
Nursing and residential care facilities	8.5	2.8
Individual and family services	7.2	2.4
Retail Stores - Motor vehicle and parts	5.9	2
Retail Stores - Food and beverage	5.8	1.9
Home health care services	5.2	1.7
Wholesale trade businesses	4.5	1.5
Real estate establishments	4.4	1.5
Retail Stores - Building material and garden supply	3.9	1.3
Retail Nonstores - Direct and electronic sales	3.6	1.2
Retail Stores - Miscellaneous	3.6	1.2
Medical and diagnostic labs and outpatient and other ambulatory care services	3.3	1.1

Source: IMPLAN