

APPENDIX H
ECONOMIC IMPACT ASSESSMENT

Potential Economic Impact of a Proposed Advanced Manufacturing Facility In South Carolina

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Potential Economic Impact of a Proposed Advanced Manufacturing Facility in South Carolina

Summary

Completion of Phase 1

Impact Type	Employment	Labor Income	Output
F kt gev'Ghhgev	4.222	&432.753.38:	&5.887.; 45.656
Kpf kt gev'Ghhgev	5.596	&42; .479.845	& 4: .937.583
Kpf wegf 'Ghhgev	4.899	& 9.78: .597	&4; ; .442.798
Vqvcl'Ghhgev	8,052	&739.579.388	\$4,793,859,371

Ucwg'cpf 'Nqecn'Vcz gu<**\$72,387,244**

Completion of Phase 2

Impact Type	Employment	Labor Income	Output
F kt gev'Ghhgev	6.222	&643.284.557	&9.553.: 68.: 89
Kpf kt gev'Ghhgev	8.96:	&63: .737.469	&3.879.652.944
Kpf wegf 'Ghhgev	7.577	&3; 7.358.956	&7; : .663.337
Vqvcl'Ghhgev	16,103	&3.256.936.538	\$9,587,718,704

Ucwg'cpf 'Nqecn'Vcz gu<**\$144,744,485**

Construction Impact
(assumed \$200,000,000 facility)

Impact Type	Employment	Labor Income	Output
Direct Effect	1,988	\$93,362,276	\$199,999,999
Indirect Effect	376	\$20,677,050	\$56,004,137
Induced Effect	722	\$26,264,915	\$80,531,239
Total Effect	3,086	\$140,304,240	\$336,535,375

State and Local Taxes: **\$11,344,871**

Introduction

Economic impact analysis primarily involves determining the change in economic activity in a region as a result of new business activity. This report analyzes the change in economic activity that will take place as a result of the construction and on-going production activities of a new advanced manufacturing and assembly facility that requires the presence of certain transportation, distribution, and logistics (TDL) cluster infrastructure (*e.g.*, automotive or aerospace industry sectors) and of other related facilities in South Carolina.¹

Proposed Project

The project will be completed in two phases over a ten year period. In Phase 1, a \$600 million facility will be built hiring approximately 2,000 employees. It is estimated that the \$600 million investment will consist of \$400 million in equipment and \$200 million in land and building. In Phase 2, an additional \$400 million will be invested and an additional 2,000 jobs will be created. The estimated economic impact consists of two parts: the construction of the facility and the operations of the facility. The most relevant impact is the annual on-going impact of production from the facility. To estimate the impact, we consider the impact the facility when it is fully built in Phase 1.

Model Description

The primary purpose of a regional economic impact model is to determine the inter-relationships among the various sectors of an economy. Using these relationships, the ramifications of any economic activity can be traced through the linkages within the various economic sectors. These relationships are tabulated in an input-output table (I-O table). The I-O table is the basis for regional impact analyses. The table is constructed with data on detailed inter-

¹ The specific manufacturing industry is known to the author but for reasons of confidentiality is omitted from this report.

industry flows throughout an economy and information on both final demands and total output. An I-O table is fundamentally an accounting relationship for an entire economy (national, state, or sub-state), with each industry represented as both a column and a row in a matrix. In simple terms, it is a set of recipes for production in a given economy. The table provides data on industry demands and supplies to all industries. To determine regional impacts, the I-O table needs to be localized. A technique utilizing location quotients is the most common method. Location quotients are a form of top-down modeling from the national tables. An important consideration in developing regional models is the determination of leakages. Concrete, for example, purchased outside of the economic region does not exert an impact within the region. In this analysis we have assumed that none of the equipment purchased for the new plant will be produced in South Carolina. In addition, salary spent on goods and services produced elsewhere reduce the economic impacts.

Economic impacts are often referred to as “multiplier effects.” The direct spending on the construction of the new facility represents the initial or direct impact. This direct impact value is also the input into a regional impact model. The multiplier effects are often termed “ripple effect,” invoking an image of a rock tossed into a pond generating ripples across the water. These ripple effects consist of indirect and induced impacts. For example, the construction company buys concrete. The concrete company in turn may purchase gasoline for its trucks. These purchases are the “indirect impacts.” Each firm engaged in the direct construction and each firm in the supply chain (or backwards linkages) pays its employees. These employees in turn purchase goods and services locally. These purchases make up the “induced impacts.” Regional impact models measure these impacts.

In this report IMPLAN (Impact Analysis for Planning) was used. In the mid-1970s, the USDA Forest Service developed IMPLAN for community impact analysis. The current IMPLAN input-output database and model is maintained and sold by MIG, Inc. (Minnesota IMPLAN Group). According to the USDA, Natural Resources Conservation Service, over 1,500 clients across the country use the IMPLAN model (2009), making the results acceptable in inter-agency analysis within the government. IMPLAN users range from federal, state, and local governments, universities, and private companies. In South Carolina the model is used by university researchers at Clemson, the University of South Carolina, Coastal Carolina University, and the Citadel.

IMPLAN localizes the data within the state. IMPLAN contains 440 different sectors. The proposed advanced manufacturing facility is similar to manufacturing already exists within the state. By localizing the supply chain within the state of existing firms, we can estimate the ripple effects of a new plant. In a sense, what we are doing is assuming that the existing industry expands to the size of proposed plant and continues to utilize the existing supply chain. The impact of the construction of the new plant is categorized as IMPLAN 35, Construction of New Non-Residential Manufacturing Structures.

Economic Impact Analysis – Terminology

Term	Definition
Economic activity	Total payments within the region.
Jobs	The number of jobs in the region supported by the economic activity associated with the project. Job estimates are not full time equivalents, but include part time positions. Seasonal jobs are adjusted to annual equivalents, e.g. four jobs for three months each equates to one job.
Income	Labor income, including wages and salaries, payroll benefits and incomes of sole proprietors.
Direct effects	Direct effects are the changes in sales, income and jobs in those businesses or agencies that directly receive the spending directly from the operations of the plant.
Indirect effects	Changes in sales, income and jobs in industries that supply goods and services to the businesses that sell directly to the plant.
Induced effects	Changes in economic activity in the region resulting from household spending of income earned through a direct or indirect effect. For example, the plant's employees live in the region and spend their incomes on housing, groceries, education, clothing and other goods and services within the region.
Total Output	Sum of direct, indirect and induced effects.
Multipliers	Multipliers capture the size of the total effects relative to the direct effects.

Estimated Impacts

The proposed initial investment is assumed to \$600 million. Of this, \$400 million is equipment which we assume to be purchased outside of South Carolina and thus exerts no impact within the state. The remaining \$200 million is assumed to be for land and building, however there is no breakdown of how much will be used for construction. For the purposes of estimating an

impact, we have used \$200 million in construction costs. If this amount is reduced then the impact will be reduced proportionally.

Construction Impact
(assumed \$200,000,000 facility)

Impact Type	Employment	Labor Income	Output
Direct Effect	1,988	\$93,362,276	\$199,999,999
Indirect Effect	376	\$20,677,050	\$56,004,137
Induced Effect	722	\$26,264,915	\$80,531,239
Total Effect	3,086	\$140,304,240	\$336,535,375

State and Local Taxes: **\$11,344,871**

It is estimated that the initial investment will generate a total of 3,086 during the construction phase which will support \$140,304,240 in labor income and generate a total impact of \$336,535,375. State and local taxes collected as a result of this activity is estimated to be in excess of \$11 million.

Completion of Phase 1

Impact Type	Employment	Labor Income	Output
Direct Effect	2,000	\$210,531,168	\$3,665,923,434
Indirect Effect	3,374	\$209,257,623	\$828,715,361
Induced Effect	2,677	\$97,568,375	\$299,220,576
Total Effect	8,052	\$517,357,166	\$4,793,859,371

State and Local Taxes: **\$72,387,244**

Once the plant is up and running at the completion of Phase 1 it is estimated that 2,000 jobs will be directly employed at the plant. This will result in a total of 8,052 jobs within the state. Total labor income is estimated to be over \$517 million with a total economic impact of over \$4.7 billion. Over \$72 million will be collected in state and local taxes annually. (This amount could potentially be reduced depending on incentives offered.)

Completion of Phase 2

Impact Type	Employment	Labor Income	Output
Direct Effect	4,000	\$421,062,335	\$7,331,846,867
Indirect Effect	6,748	\$418,515,247	\$1,657,430,722
Induced Effect	5,355	\$195,136,734	\$598,441,115
Total Effect	16,103	\$1,034,714,316	\$9,587,718,704

State and Local Taxes: **\$162,871,289**

Upon completion of Phase 2, it is estimated that the plant will have approximately doubled in size to approximately 4,000 employees. The total impacts approximately double from Phase 1 as a result. Total economic activity in the state is estimated to increase to almost \$10 billion which will support over 16,000 jobs. Over \$162 million will be collected in state and local taxes annually. (This amount could potentially be reduced depending on incentives offered.)

Author

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Frank Hefner, Ph. D., is a Professor of Economics and director of the Office of Economic Analysis at the College of Charleston. He received his B.A. Degree in Economics from Rutgers College and his M.A. and Ph.D. Degrees from the University of Kansas. He taught at Washburn University in Topeka while he was a research assistant in the Institute for Policy and Social Research at the University of Kansas and at the University of South Carolina where he served as a research economist in the Division of Research. Dr. Hefner's research interests include regional economic development and forecasting. He participates in the Regional Advisory Committee of the S.C. Board of Economic Advisors. He is a past president of the Southern Regional Science Association. He has been quoted frequently in the press and has commented on economic conditions on local television and radio stations and before a number of organizations.