

**Economic Impact Study of the Progress Energy, Inc.,
Brunswick Nuclear Power Facility on North Carolina State
Planning Region O**

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Research Project for Progress Energy, Inc.

Economic Impact Study of the Progress Energy, Inc., Brunswick Nuclear Facility on North Carolina State Planning Region O

Executive Summary

The Progress Energy, Inc., nuclear facility located in Brunswick County near Southport, North Carolina, has significant positive impacts on the four counties of Brunswick, Columbus, New Hanover, and Pender that comprise State Planning Region O in Southeastern North Carolina. The facility has impacts on gross output or income, employment, payrolls, self-employment income, property income, indirect business taxes, and local property taxes.

The facility's impact on gross output or income in the four counties of Region O was almost \$901 million in 2003, 14 percent of the value of total regional output in the four-county area. The facility supported 2,030 jobs (1.3 percent of total employment) and \$88.4 million in payrolls in the region in 2003, with an annual average salary per job of \$43,500. These jobs include jobs at the Brunswick facility and jobs supported by companies that supply and/or are supported by the facility's operations. The impact on self-employment income was \$12.4 million. The impact on property income, viz., rents, dividends and interest, was \$184.7 million. Indirect business tax collections, e.g., sales and excise taxes, attributed to the operation of the facility totaled \$48.4 million. County property tax revenues attributable to facility were \$8.1 million (3.7 percent of total collections on real property) with an implied real property tax base of \$1,274.3 million (3.7 percent of the total tax base).

Quite surprising is the magnitude of the nuclear facility's economic contributions in New Hanover and Pender Counties. In New Hanover County, the

facility supported approximately \$352 million in total output. This is a little over 70 percent of the output effects in Brunswick County of \$490 million.

Pender County impacts are perhaps the most surprising. The nuclear facility supported 29 percent, almost one-third, of the total value of output for the entire county.

The nuclear facility is one of the regional economy's major contributors. Prior to this report, little, if any was known about the facility's economic impact inside or outside of Brunswick County. It has been an unknown and, perhaps, at times, misunderstood and unappreciated, major asset to the four-county regional economy and will continue to be in the future. Also, not to be overlooked are Progress Energy's significant public service contributions associated with the nuclear facility.

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Introduction

In July 2004, Progress Energy, Inc., (PGN) contracted with Dr. Claude Farrell and Dr. William W. Hall, Jr., economics professors at UNC Wilmington, to conduct a study of the impact that the facility had on the economy of the four counties of Brunswick, Columbus, New Hanover, and Pender in 2003. These four counties comprise State Planning Region O in Southeastern North Carolina.

II. The Nature of an Economic Impact Study

As the name implies, an economic impact study is conducted to estimate the impact that firms in a specific business sector have on the economy of the surrounding area. The impacts take several forms. The most obvious is the direct impact that measures payments made by the firms in that sector that flow directly into the local economy. These direct impacts include, but are not limited to, employee salaries and payments for raw materials and supplies. Beyond the direct impact, there are the indirect and induced impacts that reflect the “ripple effect” associated with the direct impact. These impacts are based on the “multiplier effect,” an economics principle that provides an estimate of the total amount of spending that takes place, including the “ripple effect.” Some proportion of every dollar received by employees and suppliers is re-spent in the local economy, i.e., initial sales are multiplied by some factor, and this recirculation generates additional income and revenue.

The model used to estimate various measures of the economic impact on the four-county economy was developed using the IMPLAN Professional™ for

Windows (Version 2.2) software.ⁱ This software is commonly used by business, government, and academic institutions to help develop economic impact analyses.

III. The Study

This study estimates the total economic impact – the sum of direct, indirect, and induced impacts – of the PGN Brunswick nuclear facility. All data are for 2003. The impacts that are calculated include those on output or income, employment, payrolls, gross or before-tax personal income, self-employment income, property income, indirect business taxes, and local property taxes. Personal income is income earned by city residents. Self-employment income is income earned by those self-employed in the City. Property income is income from such sources as rents, royalties, and dividends. Indirect business taxes include excise and sales taxes paid by individuals to businesses. The impact on county property tax collections, excluding any property taxes collected by the municipalities in the counties, is also calculated.

IV. The Brunswick Nuclear Facility

The Brunswick nuclear plant is located on a 1,200 acre site near Southport, North Carolina, at the mouth of the Cape Fear River and is owned jointly by PGN (81.67%) and the N. C. Eastern Municipal Power Agency (18.33%). The plant is a dual-unit power plant that has a combined capacity of approximately 1,770 megawatts, generating enough electricity for approximately 1 million homes. The first nuclear plant built in North Carolina, the Brunswick plant generates between 20 and 25 percent of PGN's electricity produced for its customers in North and South Carolina.

The Brunswick units began commercial operation in November 1975 (Unit 2) and March 1977 (Unit 1). The Brunswick units are utilized as “base load” plants, operating at full power continuously except when maintenance or refueling activities are needed.

V. The 2003 Impacts

V.A. The Regional Impacts

Table 1 shows the 2003 impacts that were estimated for the Brunswick nuclear plant. As certain data are proprietary, only the total impacts, i.e., the sum of the direct, indirect, and induced impacts, are shown. All dollar figures are in 2003 dollars.

Based on the data in Table 1, in 2003 the PGN Brunswick nuclear facility supported almost \$901 million in output, 2,030 jobs, \$100.8 million in personal income, \$88.4 million in payrolls, \$12.4 million in self-employment income, \$184.7 million in property income, \$48.4 million in indirect business taxes, and \$8.1 million in county tax collections on real property.ⁱⁱ The property tax collections exclude any municipal collections. The implied real property tax necessary to generate these property tax collections was almost \$1.3 billion.ⁱⁱⁱ

Table 1
2003 Economic Impact of PGN Brunswick Nuclear Facility Operations on North Carolina State Planning Region O¹

Impact Measure	Impact
Output	\$900.7 million
Employment²	2,030
Personal Income	\$100.8 million
Payrolls	\$88.4 million
Self-Employment Income	\$12.4 million
Property Income	\$184.7 million
Indirect Business Tax Collections	\$48.4 million
County Property Tax Collections³	\$8.1 million
Implied Real Property Tax Base⁴	1,274.3 million

¹ Region O includes Brunswick, Columbus, New Hanover, and Pender Counties.

² Employment includes employment at the PGN Brunswick nuclear facility and employment due to the “ripple effect.”

³ This is a four-county total, excluding municipal collections.

⁴ The implied real property tax base is the tax base necessary to generate the associated property tax collections.

Source: IMPLAN Model and Authors’ Calculations.

To place the above numbers in some perspective, total regional product or output in 2003 is estimated at \$6.4 billion. Thus, the PGN Brunswick nuclear facility supported 14 percent of the value of total regional economic activity in 2003. Data from the North Carolina Employment Security Commission (ESC) indicate that average monthly employment in the four-county region over 2003 was 156,000. Thus, the nuclear facility supported 1.3 percent of total regional employment in 2003. ESC data also indicate an average annual salary across all sectors in the four-county region of \$28,300 in 2003. Thus, the average annual salary supported by the nuclear facility of \$43,500, calculated by dividing payrolls by employment, was 53.5 percent above the all-sector average. Total property taxes on real property collected by the four counties, exclusive of municipal collections, was \$215.8 million in FY 2003-2004. Thus, the nuclear facility supported 3.7 percent of these

collections. The implied real property tax base supported by the nuclear facility was also 3.7 percent of the value of all real property in the region.

Table 2 shows the distribution of the output impact across selected sectors of the regional economy. Not surprisingly, the bulk of the impact (91 percent) is in the nuclear power facilities sector itself. Maintenance and repair services receive 1.7 percent of the impact. Real estate, home owners, and banking receive 0.5 percent of the impact each.

Table 2
Distribution of the PGN Brunswick Nuclear Facility Output Impact in 2003

Sector	Impact
Nuclear Power Facilities	\$819.3 million
Maintenance and Repair Services	\$15.4 million
Real Estate	\$5.1 million
Home Owners	\$4.9 million
Banking	\$4.5 million
All Other Sectors	\$51.4 million

Source: IMPLAN Model and Authors' Calculations.

Table 3 shows the distribution of the employment impact across selected sectors of the regional economy. Not surprisingly, most of the employment impact (40 percent) is in the nuclear power facilities sector itself. Maintenance and repair services receive 13 percent of the impact. Eating and drinking places receive 5 percent of the impact, followed by miscellaneous retail outlets and food stores with 3 percent of the impact each.

Table 3
Distribution of the PGN Nuclear Facility Employment Impact in 2003

Sector	Impact
Nuclear Power Facilities	810
Maintenance and Repair Services	260
Eating and Drinking Places	100
Miscellaneous Retail Outlets	70
Food Stores	50
All Other Sectors	740

Source: IMPLAN Model and Authors' Calculations.

V.B. The County Impacts

This section estimates the impacts in each of the four counties comprising State Planning Region O.^{iv} Table 4 provides the information on the 2003 impact.

Table 4
Distribution of the PGN Brunswick Nuclear Facility Impact in 2003 by County

Impact Measure	Brunswick County	Columbus County	New Hanover County	Pender County
Output	\$490.2 m	\$36.8 m	\$351.7 m	\$22.1 m
Employment	1,100	80	800	50
Personal Income	\$54.9 m	\$4.1 m	\$39.4 m	\$2.5 m
Payrolls	\$48.1 m	\$3.6 m	\$34.5 m	\$2.2 m
Self-Employment Income	\$6.7 m	\$0.5 m	\$4.8 m	\$0.3 m
Property Income	\$100.5 m	\$7.5 m	\$72.1 m	\$4.5 m
Indirect Business Tax Collections	\$26.3 m	\$2.0 m	\$18.9 m	\$1.2 m
County Property Tax Collections	\$3.3 m	\$0.4 m	\$3.2 m	\$1.2 m
Implied Real Property Tax Base	\$549.1 m	\$52.6 m	\$469.8 m	\$202.8 m

Source: IMPLAN Model and Authors' Calculations.

To place the numbers in Table 4 in some perspective, total output in Brunswick County in 2003 is estimated at \$1.26 billion. Thus, the PGN Brunswick nuclear facility supported almost 16 percent of the value of total county output in 2003. ESC data indicate an average monthly employment during 2003 in Brunswick County of 34,700. Thus, the facility supported 3.2 percent of total county employment in 2003. Real property tax collections in the county totaled \$64

million in 2003 with an implied real property tax base of \$10.8 billion. Thus, the facility supported 5.1 percent of property tax collections in the county. The implied property tax base was also 5.1 percent of the total real property tax base in the county.

Total output in Columbus County in 2003 is estimated at \$611.1 million. Thus, the PGN Brunswick nuclear facility supported almost 19 percent of the value of total county output in 2003. ESC data indicate an average monthly employment in the county of 20,100 over 2003. Thus, the facility supported 0.4 percent of total county employment in 2003. Real property tax collections in the county totaled \$15.8 million in 2003 with an implied real property tax base of \$2 billion. Thus, the facility supported 2.6 percent of county property tax collections in 2003. The implied property tax base was also 2.6 percent of the total real property tax base in the county.

Total output in New Hanover County in 2003 is estimated at almost \$4.2 billion. Thus, the PGN Brunswick nuclear facility supported almost 12 percent of the value of total county output in 2003. ESC data indicate an average monthly employment in the county of 84,100 over 2003. Thus, the facility supported 0.9 percent of total county employment in 2003. Real property tax collections in the county totaled \$115.4 million with an implied real property tax base of almost \$17 billion. Thus, the facility supported 2.8 percent of county property tax collections in 2003. The implied property tax base was also 2.8 percent of the total real property tax base in the county.

Total output in Pender County in 2003 is estimated at \$352.2 million. Thus, the PGN Brunswick nuclear facility supported almost 29 percent of the value of total county output in 2003. ESC data indicate an average monthly employment in the county of 17,560 over 2003. Thus, the facility supported 0.3 percent of total county employment in 2003. Real property tax collections in the county totaled \$20.5 million with an implied real property tax base of \$202.8 million. Thus, the facility supported 5.8 percent of county property tax collections in 2003. The implied property tax base was also 5.8 percent of the total real property tax base in the county.

VI. Additional Impacts of the Brunswick Nuclear Facility

PGN's Brunswick nuclear facility also makes substantial contributions to the social, aesthetic, and cultural environment of the region. For example, through the first seven months of 2004, facility employees had provided nearly 1,500 volunteer hours to numerous local organizations. These employees had also pledged more than \$17,000 to Habitat of Brunswick County. Since 2000, PGN has made more than \$1.9 million in grants to nonprofit organizations in the region.

VII. Summary and Conclusions

As expected by the authors the impact of PGN's Brunswick nuclear facility is quite significant. As a stand-alone enterprise, the authors believe that it is the largest single contributor to the Brunswick County economy with respect to income, employment, and taxes. Obviously, without knowledge of other stand-alone enterprises in the county this statement cannot be made with absolute certainty. However, the evidence presented in this study and anecdotal evidence indicates the

statement is a fact, that the nuclear facility is the largest single enterprise contributor to Brunswick County's economy.

The effect on the other three counties offered some surprises to the authors. The Columbus County and Pender County impacts were in line with what the authors anticipated. The surprises were mostly in New Hanover County.

In New Hanover County, the impact on output of \$351.7 million, about 70 percent of the output impact in Brunswick County, was unanticipated. Not only was the magnitude of this contribution by the nuclear facility unexpected, but also the contribution to New Hanover County's tax base of approximately \$470 million.

Also, worthy of note is the contribution of the nuclear facilities to Pender County's tax collections on real property, representing 5.8 percent of the total, and to Pender's tax base at 5.8 percent of the total. This most likely is a reflection of home and property ownership by persons living in Pender County and working at the nuclear facility and in enterprises supporting the operation of the facility.

The Brunswick County nuclear facility has a huge economic impact not only in Brunswick County but in Columbus, New Hanover, and Pender Counties as well. Prior to this study, the facility's importance as a major economic contributor to the four-county economy of State Planning Region O was largely unknown and unappreciated.

Endnotes

ⁱ The IMPLAN Professional™ software for Windows (Version 2.0) is available from MIG, Inc., Stillwater Minnesota.

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- ii The impact on real property tax collections was calculated by calculating real property tax collections per dollar of output produced and then multiplying this ratio by induced output.**

 - iii The size of the implied real property tax base was calculated by dividing tax collections by the tax rate. The relevant FY 2003-2004 tax rates per \$100 property valuation were \$0.59 in Brunswick County, \$0.78 in Columbus County, \$0.68 in New Hanover County, and \$0.59 in Pender County.**

 - iv These calculations were estimated using information supplied by PGN on resident counties of employees. Specifically, 54 percent of the employees designated their county of residence as Brunswick County, 4 percent as Columbus County, 39 percent as New Hanover County, and 2 percent as Pender County. These percentages were used to allocate the impact across the separate counties.**